

COMPUR Shutter Repair Manual

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Compur Shutter Repair Manual

Section 1

Introduction

COMPUR



Reparaturanleitungen für
COMPUR-VERSCHLÜSSE und
COMPUR-WECHSELFASSUNGEN

Lists of Repair Instructions for COMPUR-Shutters
and for COMPUR Quick-Change Lens Mounts.

Indications for the use of the Compur manuals

SPARE PARTS LISTS AND REPAIR INSTRUCTIONS

1. Directions for Ordering Spare Parts

Owing to the great number and variety of shutter designs, it is in your own interest to use exclusively the part designations found in our Spare Parts Lists and, in particular, **the complete fourteen-digit stock numbers**. This is the only way to exclude errors and ensure rapid execution of your orders.

To find a spare part number, you should know the camera manufacturer, camera model and lens data. First consult the **Table: Camera/Lens/Shutter**, which is arranged in the alphabetical order of the camera manufacturers. In the first three columns of this Table you will find camera model, lens data and the applicable Special Shutter number (CS-number).

The **Spare Parts Lists** are subdivided into lists for Standard Shutters and Special Shutters. The Spare Parts Lists for Standard Shutters are arranged according to Standard type numbers and those for Special Shutters in the alphabetical order of the camera makers' names.

In the "Type" column of the Spare Parts Lists for Special Shutters you will find the Special Shutter number. The so-called special parts, i. e. those parts only installed in that particular Special Shutter, are listed under the heading "Description". All other parts are covered by the Spare Parts Lists for the Standard types (CN-number) referred to at the end of each Spare Parts List.

Should you be unable to trace the designation and number of a spare part accurately in the Spare Parts Lists, please refer to the Illustration Plates mentioned in the Table: Camera/Lens/Shutter (see maximal of repair-instructions). The illustrated parts are marked with a three-digit number. This number applies to the standard part shown in the illustration and to any possible special part which serves the same function. Once you have found the three-digit number in the illustration, trace this number first in the "Illustration" column of the Special Spare Parts List. If this number cannot be found there, the part is a standard part and must be looked up in the Spare Parts List for Standard Shutters referred to at the end of each Spare Parts List for Special Shutters.

The illustration of partly assembled shutters - mostly at the foot of the exploded views - bear numbers in italics, referring to the various parts shown above. (See e. g. especially hanging of spring.)

The numbered items of the **Supplement** explain special points which have to be taken into consideration when placing orders or making repairs. References to the various items will be found in the "Supplement" column of the Spare Parts Lists and in the illustration plates in the form of encircled numbers or symbols (see below).

When ordering spare parts for Quick-Change Mounts, first consult the **Table for Quick-Change Mounts**. In the "Type" column, trace the number of the quick-change mount that matches the lens concerned, which will give you the Spare Parts List to be consulted. Please check whether the Quick-Change Mount is for a camera with or without light value follow-up system (coupled exposure meter). (See illustrations, Specifications Sheet 3 and 5).

Symbols in Spare Parts Lists

- This part may differ from the standard version. Look up stock number in Special Shutter Spare Parts List.
 - × This part will not be supplied.
 - △ This part must be ordered from the camera maker.
 - This part must be ordered from the lens maker.
 - ⑨ See Item 9 of the Supplement.
- A, B or C indicates the tensioning pinion adjustment (see Repair Instructions page 1 and 2).

2. Repair Instructions and Lubrication Schedules

The Tables also contain under the headings **"Repair Instruction"** and **"Lubrication Schedule"** indications of the applicable instructions for repair and lubrication of the shutter or Quick-Change Mount concerned. Please pay very special attention to these points in order to ensure thorough and proper maintenance.

Repair Instruction — Table of contents

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Specifications for COMPUR Shutters	Page 1	November 1956
	Page 2	September 1962
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	Page 9	November 1965
	Page 10	November 1964
	Page 11	November 1964
COMPUR Quick-Change Mounts	Page 3	August 1957
	Page 5	October 1965

Tables Camera/Lens/Shutter

Adox Dr. Schleussner-Fotowerke, Wiesbaden	August 1964
Agfa-Gevaert, München	November 1964
Balda-Camera-Werk, Bünde (Westfalen)	August 1964
Braun-Camera-Werk, Nürnberg	December 1965
Diax-Camera-Werk, Ulm	August 1964
Franka-Werke, Bayreuth	August 1964
Graflex, Inc. Rochester 3, N. Y.	December 1965
Iloca-Camera-Wilhelm Witt, Hamburg	August 1964
Kodak AG, Stuttgart	December 1965
Linhof, Nikolaus Karpf KG, München	May 1966
Linhof, Nikolaus Karpf KG, München Suppl. Sheet 1	May 1966
Rollei-Werke, Franke & Heidecke, Braunschweig	June 1968
SEM Preciorec, Aurec He. Loire/Frankreich	June 1966
Schneider, Bad Kreuznach	February 1966
Sinar-Fachkamera-Bau, Schaffhausen/Schweiz	December 1965
Various firms	December 1965
Voigtländer AG, Braunschweig	December 1965
Carl Zeiss, Oberkochen	December 1965
Zeiss Ikon AG, Stuttgart	December 1965

Illustrations Plates for Standard Shutters

SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 1	May 1956
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 2	May 1956
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 3	May 1956
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 4	October 1957
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 5	May 1956
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 6	May 1956
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 7	May 1956
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 8	October 1957
SYNCHRO-COMPUR 00-MXV Tensioning ring	CN—1110—000	Plate 9	May 1956
SYNCHRO-COMPUR 00-MXV Standard	CN—1110—010	Plate 1	Juni 1969
SYNCHRO-COMPUR 00-MXV Standard with light value	CN—1110—016	Plate 1	April 1960
follow-up system and with automatic depth-of-field indicator			
SYNCHRO-COMPUR 00 MXV Standard with light value	CN—1110—018	Plate 1	April 1960
follow-up system and with automatic depth-of-field indicator			
SYNCHRO-COMPUR 00-MXV Special model	CN—1110—019	Plate 1	April 1960
with geared selector rings			
SYNCHRO-COMPUR 00-MXV BH Reflex	CN—1110—020	Plate 1	May 1956
		Plate 2	September 1969
		Plate 3	May 1956
SYNCHRO-COMPUR 00-MXV Reflex light value	CN—1110—024	Plate 1	April 1960
follow-up system and with automatic depth-of-field indicator		Plate 2	June 1969
		Plate 3	June 1969
SYNCHRO-COMPUR 00-MXV Standard with	CN—1110—025	Plate 1	April 1960
light value follow-up system			
SYNCHRO-COMPUR 00-MXV Standard with light value	CN—1110—026	Plate 1	April 1960
follow-up system and with automatic depth-of-field indicator			
SYNCHRO-COMPUR 00-MXV Wide	CN—1110—030	Plate 1	May 1956
		Plate 2	June 1969
SYNCHRO-COMPUR 00-MXV Wide with	CN—1110—034	Plate 1+2	April 1960
light value follow-up system			

SYNCHRO-COMPUR 00-MXV Wide Reflex with light value follow-up system	CN—1110—035	Plate 1 Plate 2 Plate 3	July 1969 April 1960 April 1960
COMPUR 00-XV	CN—1112—004	Plate 1	September 1963
COMPUR-RAPID 00-XV Standard without tensioning ring	CN—1112—010	Plate 1	October 1957
SYNCHRO-COMPUR 0-MXV GH Reflex 103	CN—1210—022	Plate 1	April 1967
SYNCHRO-COMPUR 0-MXV GH Reflex 103	CN—1210—022	Plate 2	October 1966
SYNCHRO-COMPUR 0-MXV GH Reflex 103	CN—1210—022	Plate 2a	April 1967
SYNCHRO-COMPUR 0-MXV GH Reflex 103	CN—1210—022	Plate 3	April 1967
SYNCHRO-COMPUR 0-MXV GH Reflex Quick-Change 107	CN—1210—040	Plate 1	May 1967
SYNCHRO-COMPUR 0-MXV GH Reflex Quick-Change 107	CN—1210—040	Plate 2	November 1966
SYNCHRO-COMPUR 0-MXV GH Reflex Quick-Change 107	CN—1210—041	Plate 1	April 1967
SYNCHRO-COMPUR 0-MXV GH Reflex Quick-Change 107	CN—1210—041	Plate 2	April 1967
SYNCHRO-COMPUR 0-MXV GH Reflex Quick-Change f:500	CN—1210—047	Plate 1	April 1968
SYNCHRO-COMPUR 0-MXV with blade opening mechanism	CN—1210—051	Plate 1	June 1969
SYNCHRO-COMPUR 1-MX	CN—1307—000	Plate 1-8	December 1965
COMPUR-RAPID 000-X	CN—1914—000	Plate 1	November 1964
COMPUR-RAPID 000-X	CN—1914—000	Plate 2	January 1964
COMPUR-RAPID 000-X	CN—1914—000	Plate 3	November 1964
COMPUR-RAPID 000-X	CN—1914—000	Plate 4	November 1964
COMPUR 000-X	CN—1915—001	Plate 1-3	December 1965
COMPUR 000-X Single-action shutter	CN—1916—001	Plate 1	December 1965
COMPUR 000-X with wedge differential and film speed setting	CN—1916—004	Plate 1	December 1965

Illustration Plates for Special Shutters

Zeiss Ikon AG, Stuttgart, SYNCHRO-COMPUR 00-MXV	CS—1110—556	Plate 1 + 2	September 1963
Voigtländer, Braunschweig, SYNCHRO-COMPUR-X 00-XV	CS—1112—455	Plate 1	December 1965
Linhof, München, SYNCHRO-COMPUR 0-MXV Spezial	CS—1210—604	Plate 1	October 1966
Linhof, München, SYNCHRO-COMPUR 0-MXV Spezial	CS—1210—604	Plate 2	October 1966
SYNCHRO-COMPUR 0-MXV	CS—1210—660	Plate 1	December 1965
Linhof, München, SYNCHRO-COMPUR 0-MXV	CS—1210—671	Plate 1 + 2	May 1970
Graflex, Rochester, USA, SYNCHRO-COMPUR 1-MX	CS—1307—607	Plate 1	December 1965
Rollei-Werke, Braunschweig, COMPUR-000-X Reflex	CS—1912—206	Plate 1-6	June 1968
Agfa-Gevaert, München, COMPUR-000-X Reflex	CS—1914—102	Plate 1 + 2	November 1964
Kodak AG, Stuttgart, COMPUR-RAPID 000-X	CS—1914—301	Plate 1	November 1964

Repair Instructions for Shutters

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Page 7	March 1968
Page 9	March 1968
Page 11	April 1960
Page 13	April 1960
Page 15	July 1966
Page 17	April 1960
Page 19	June 1966
Page 21	June 1966
Page 23	April 1960
Page 25	June 1963
Page 27	October 1964
Page 29	May 1966
Page 30	December 1965
Page 32	December 1965
Page 34	December 1965

Repair Instructions for Special Shutters

Page 1/S	June 1963
Page 3/S	June 1966
Page 5/S	October 1964
Page 7/S	December 1965
Page 9/S	June 1968
Page 11/S	April 1970
Page 13/S	April 1970

Tables Lens/Quick-Change Mount

COMPUR Quick-Change Mount for SYNCHRO-COMPUR 00-MXV Wide without light value follow-up system	Page 1	March 1969
COMPUR Quick-Change Mount for SYNCHRO-COMPUR 00-MXV Wide- and Wide-Reflex-Shutter with light value follow-up system	Page 2	March 1969

Illustrations Plates for Quick-Change Mounts

COMPUR Quick-Change Mount 00	CN—1111—800	Plate 1-3 (Form A/1, A/2 and B)	May 1966
COMPUR Quick-Change Mount 00 with automatic depth-of-field indicator for Wide- and Wide- Reflex-Shutter with light value follow-up system	CN—1111—851	Plate 1 (Form A/1-K, A/2-K, B/1-K)	April 1969
COMPUR Quick-Change Mount 00 with automatic depth-of-field indicator for Wide- and Wide- Reflex-Shutter with light value follow-up system	CN—1111—851	Plate 2	November 1965
COMPUR Quick-Change Mount 00 with automatic depth-of-field indicator for Wide- and Wide- Reflex-Shutter with light value follow-up system	CN—1111—863	Plate 1 (Form C/1-K, C/2-K)	January 1965
		Plate 2	September 1969
COMPUR Quick-Change Mount 00 for Wide- and Wide-Reflex-Shutter with light value follow-up system	CN—1111—885/86	Plate 1	November 1965
COMPUR Quick-Change Mount for Messrs. Kodak	CS—1111—376	Plate 1	March 1969

Repair Instructions for Quick-Change Mounts

Page 1	June 1966
Page 3	April 1960
Page 5	October 1965

Lubrication Schedules for Quick-Change Mounts

COMPUR Quick-Change Mount 00	CN—1111—800	October 1957
COMPUR-Quick-Change Mount 00	CN—1111—851	January 1965

Lubrication Schedules for Shutters

SYNCHRO-COMPUR 00-MXV	CN—1110—000	May 1956
SYNCHRO-COMPUR 00-MXV	CN—1110—016/018	April 1960
SYNCHRO-COMPUR 00-MXV	CN—1110—020/030	May 1956
SYNCHRO-COMPUR 00-MXV	CN—1110—019/024/025/026	April 1960
SYNCHRO-COMPUR 00-MXV	CN—1110—034/035	April 1960
COMPUR 00-XV	CN—1112—004	June 1963
SYNCHRO-COMPUR GH Reflex 103	CN—1210—022	October 1957
SYNCHRO-COMPUR GH Reflex-Quick Change 107	CN—1210—040/041/042/047	July 1962
SYNCHRO-COMPUR 1-MX	CN—1307—000	December 1965
COMPUR-RAPID and COMPUR 000-X	CN—1914—000 CN—1915—001 CN—1916—001	October 1964
SYNCHRO-COMPUR 00-MXV Special	CS—1110—556	June 1963
SYNCHRO-COMPUR 0-MXV Special	CS—1210—604	September 1966
SYNCHRO-COMPUR 0-MXV Special	CS—1210—671	June 1963
COMPUR 000-X Reflex Special	CS—1912—206	June 1968

Supplement to Spare Parts Lists

Point 1 to 16	Sheet 1	June 1966
" 17 to 33	Sheet 2	" "
" 34 to 51	Sheet 3	" "
" 52 to 70	Sheet 4	July 1973
" 71 to 82	Sheet 5	" "
" 86 to 98	Sheet 6	" "
" 99 to 108	Sheet 7	" "
" 109 to 117	Sheet 8	" "
" 118 to 122	Sheet 9	" "
" 123 to 133	Sheet 10	" "
" 134 to 136	Sheet 11	" "
" 137 to 143	Sheet 12	" "
" 144 to 146	Sheet 13	" "

The manual "Spare Parts Lists" contains:

Parts lists for standard shutters, Parts lists for special shutters,
Parts lists for quick-change mounts, Tool lists, Supplements.

Compur Shutter Repair Manual

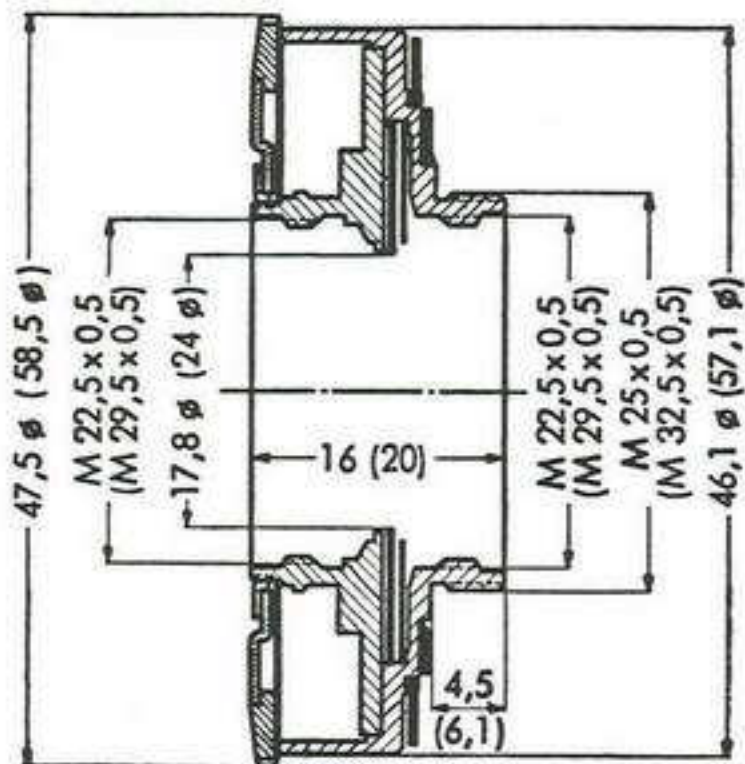
Section 2

Specifications

SPECIFICATIONS OF COMPUR SHUTTERS

Size 00 and 0

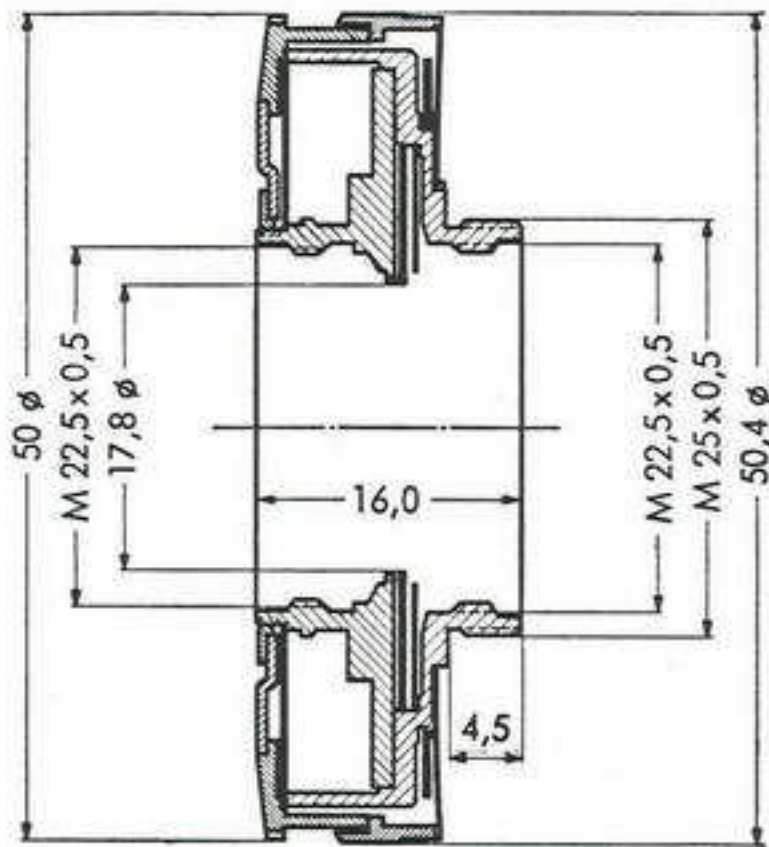
Designation	Type No.	Synchronisation
SYNCHRO-COMPUR 00-MXV with tensioning ring	CN-1110-000	X and M Contacts
SYNCHRO-COMPUR 0-MXV with tensioning ring	CN-1210-000	X and M Contacts



Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Light value scale ● Self-timer ● Tensioning ring; tensioning lever ● Tensioning and release lock ● Contact nipple on housing ● Through hole for range-finder shaft ● Choice of several front plates.

() Dimensions in brackets apply to model CN-1210-000
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

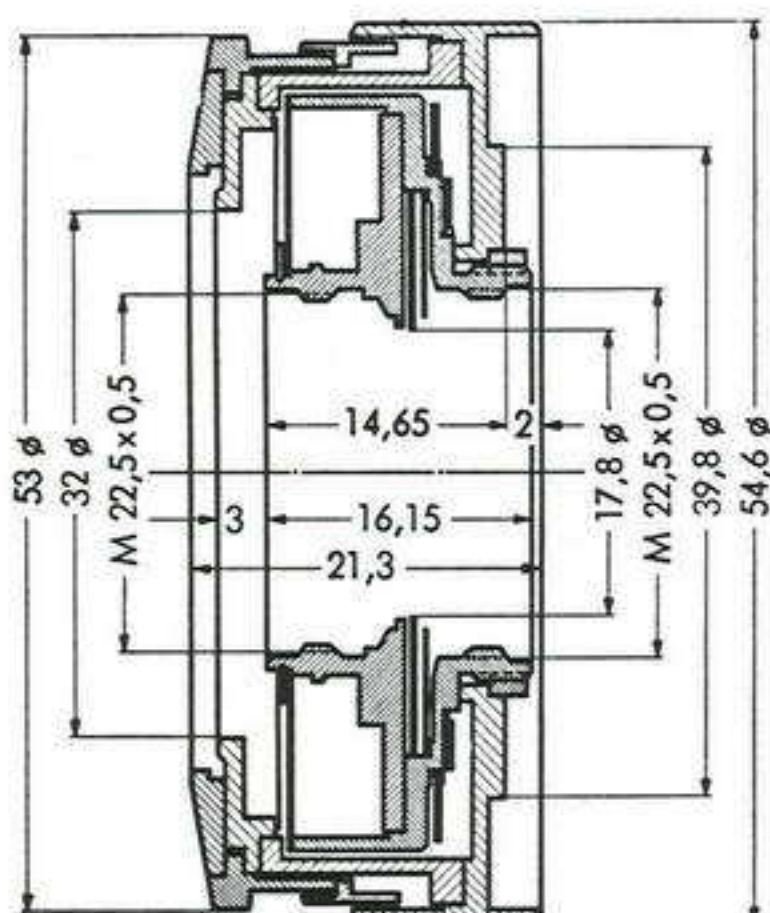
Designation	Type No.	Synchronisation
SYNCHRO-COMPUR 00-MXV Standard	CN-1110-010	X and M Contacts
COMPUR-RAPID 00-XV Standard	CN-1112-010	X Contact only



Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Exposure times indicated ● Light value scale ● Self-timer ● Tensioning and release shaft ● Detent grooves for M-X lock ● Contact lug at rear ● Through hole for rangefinder shaft ● Choice of several front plates.

Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

Designation	Type No.	Synchronisation
SYNCHRO-COMPUR 00-MXV BH Reflex	CN-1110-020	X and M Contacts

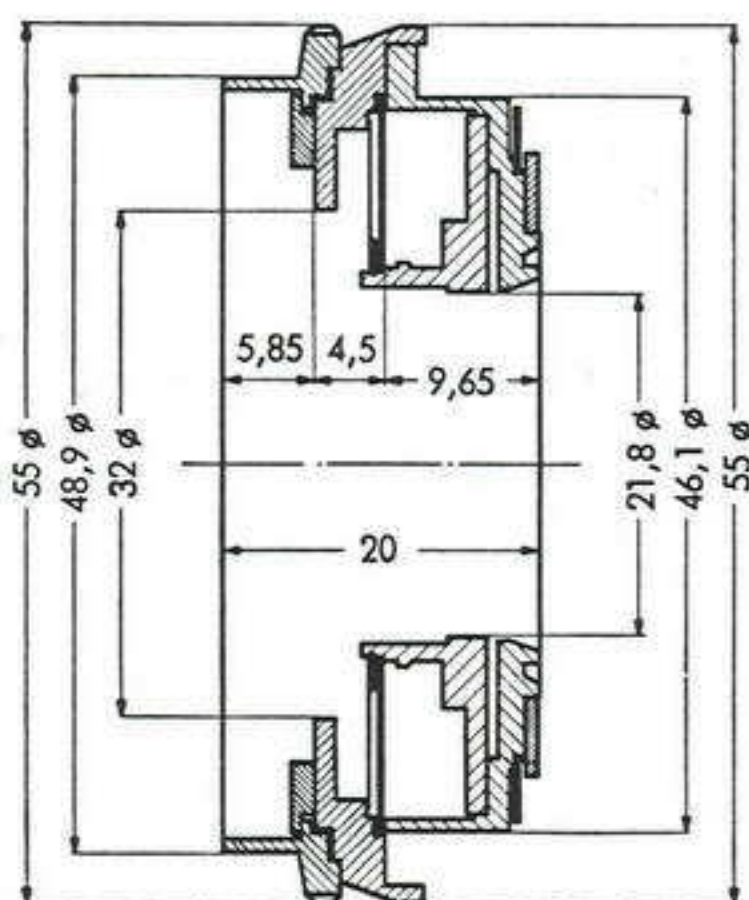


Dimensions in mms.
 ϕ = diameter
 Dimensions are subject to alterations

Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Exposure times indicated
 ● Light value scale ● Self-timer ● MX-shifting ring lock ● Contact lug at rear
 ● Preset diaphragm ● Shutter opening device ● Singleshift drive system ● Rigid lens mount ● Bayonet mount with lock for quick-change lenses.

Discontinued, with rare exceptions; has been replaced for serial production by type CN-1110-024 (see SPECIFICATIONS OF COMPUR SHUTTERS, Page 7).

Designation	Type No.	Synchronisation
SYNCHRO-COMPUR 00-MXV "Wide"	CN-1110-030	X and M Contacts



Dimensions in mms.
 ϕ = diameter
 Dimensions are subject to alterations

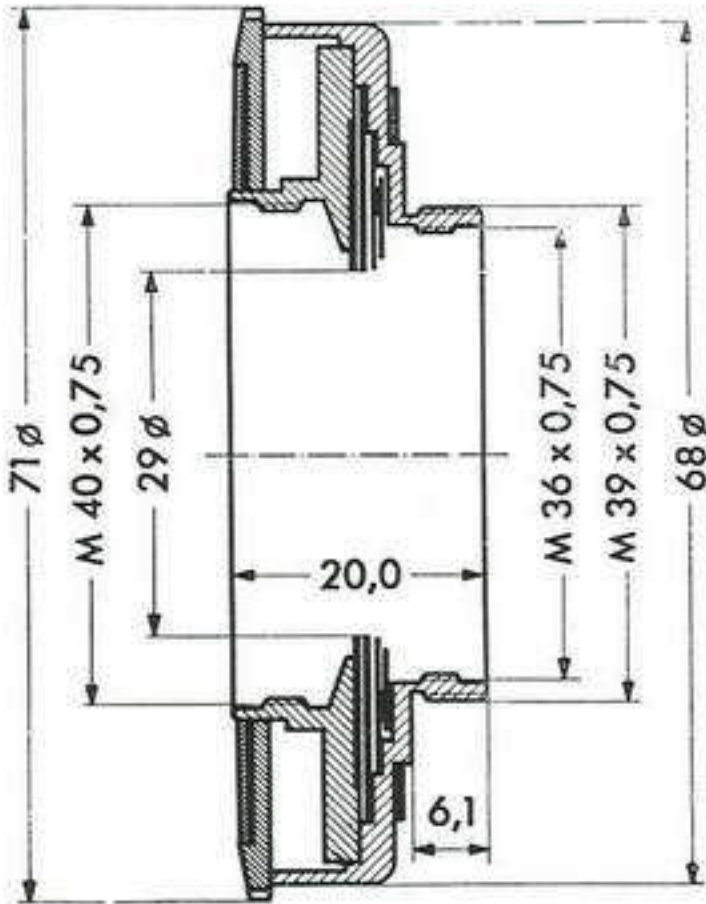
Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Exposure times indicated
 ● Self-timer ● Large inside diameter ● No diaphragm ● Light value scale for Compur quick-change mount ● MX-shifting ring lock ● Contact lug at rear ● Tensioning shaft and release lever ● Rigid lens mount ● Bayonet mount with lock for quick-change lenses ● Through hole for rangefinder shaft.

Discontinued, with rare exceptions; has been replaced for serial production by type CN-1110-034 and has additionally been extended to a 'wide-opening reflex' type CN-1110-035 (see Specification, Page 5 and 7).

SPECIFICATIONS OF COMPUR SHUTTERS

Sizes 1 to 5

Designation	Type No.	Synchronisation
SYNCHRO-COMPUR with tensioning ring	CN-1307-000	X and M Contacts

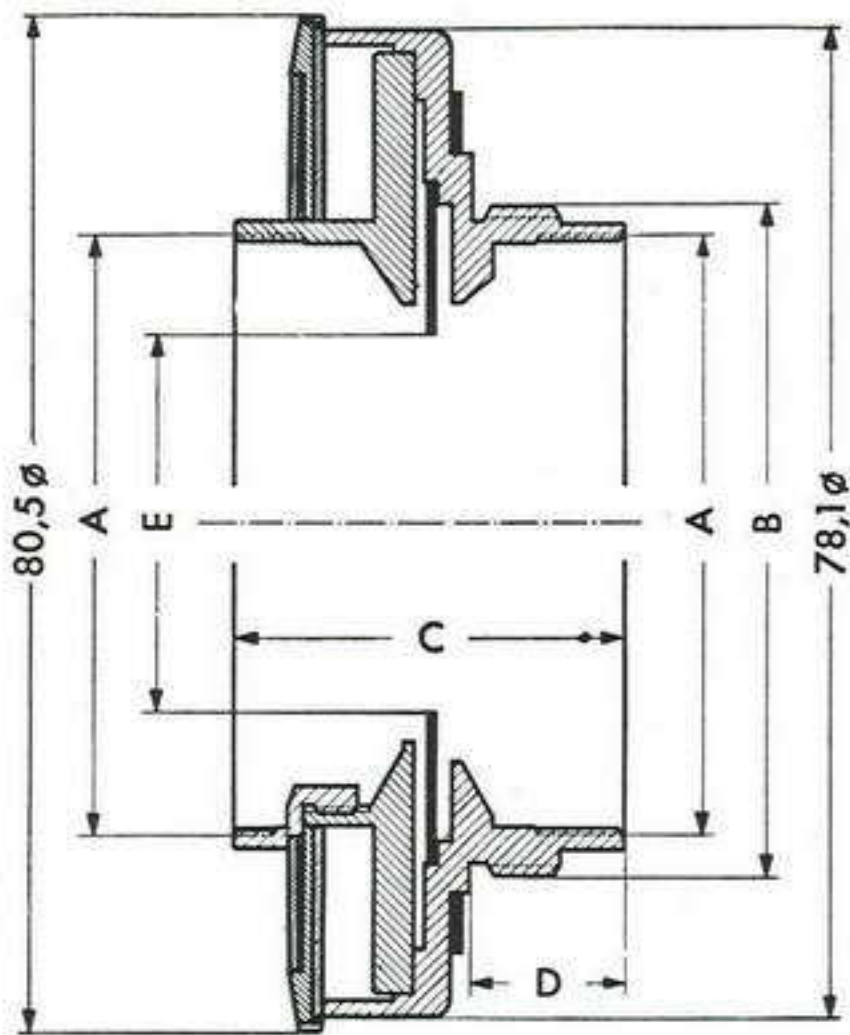


Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

Shutter speeds: T, B, 1, 2, 5, 10, 25, 50, 100, 200, 400 ● Self-timer ● Tensioning ring; release lever; nipple for cable release
Tensioning and release lock ● Contact nipple on housing; contact lug at rear optional ● Choice of several front plates
● Shutter opening device.



Designation	Type No.	Synchronisation
COMPUR 2-X Tube 5/I	CN-1408-012	X Contact
COMPUR 2-X Tube 5/II	CN-1408-013	X Contact
COMPUR 2-X Tube 6/II	CN-1408-015	X Contact

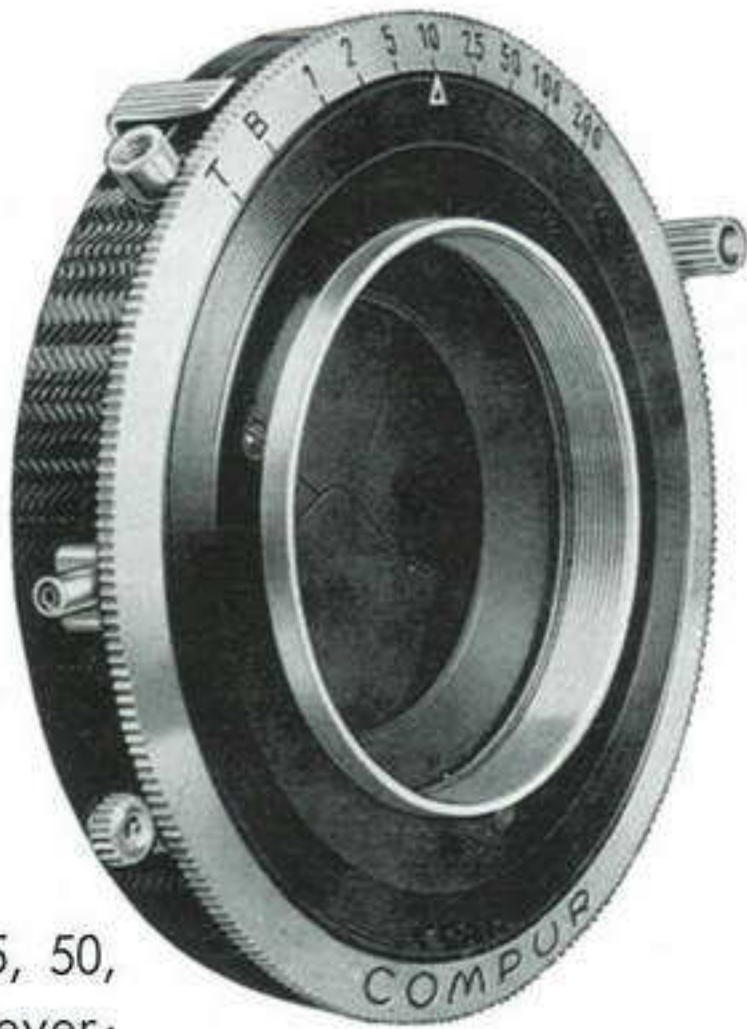


Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

CN-1408-012
CN-1408-013

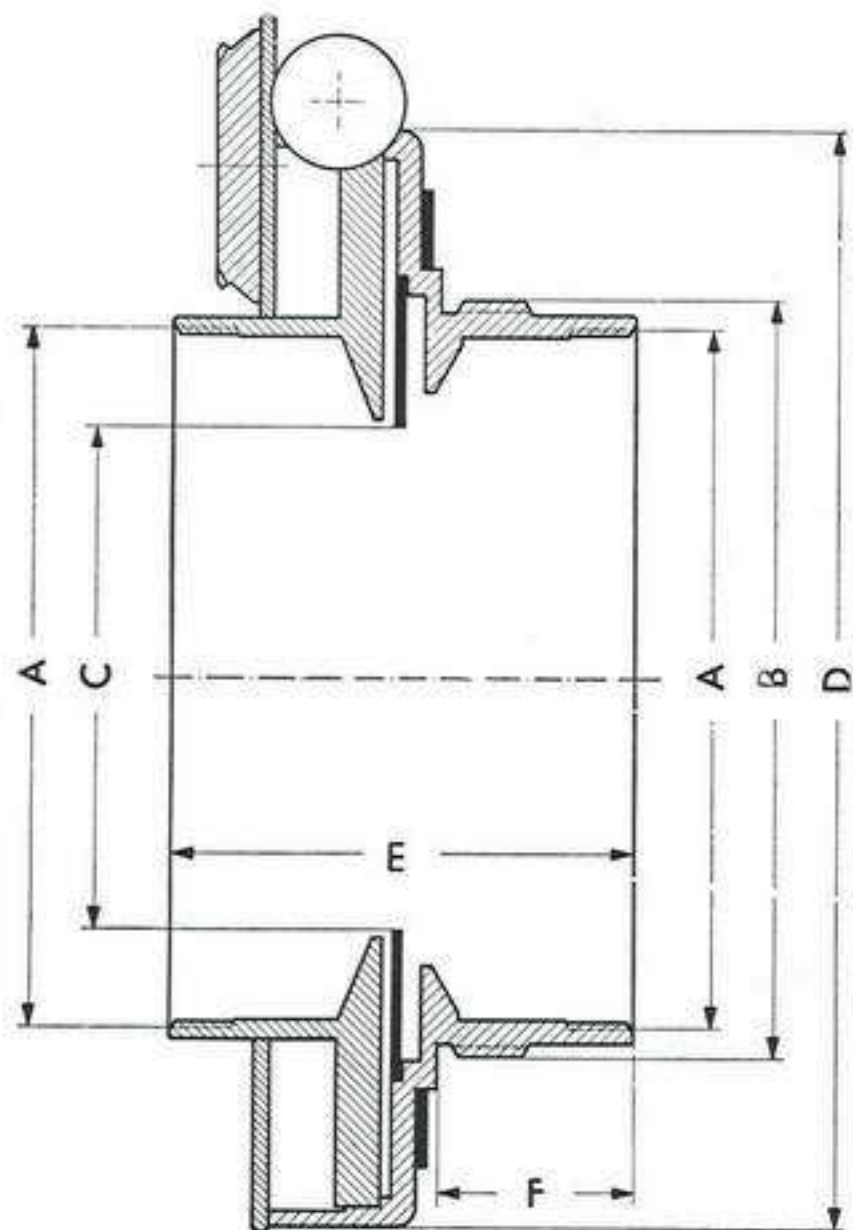
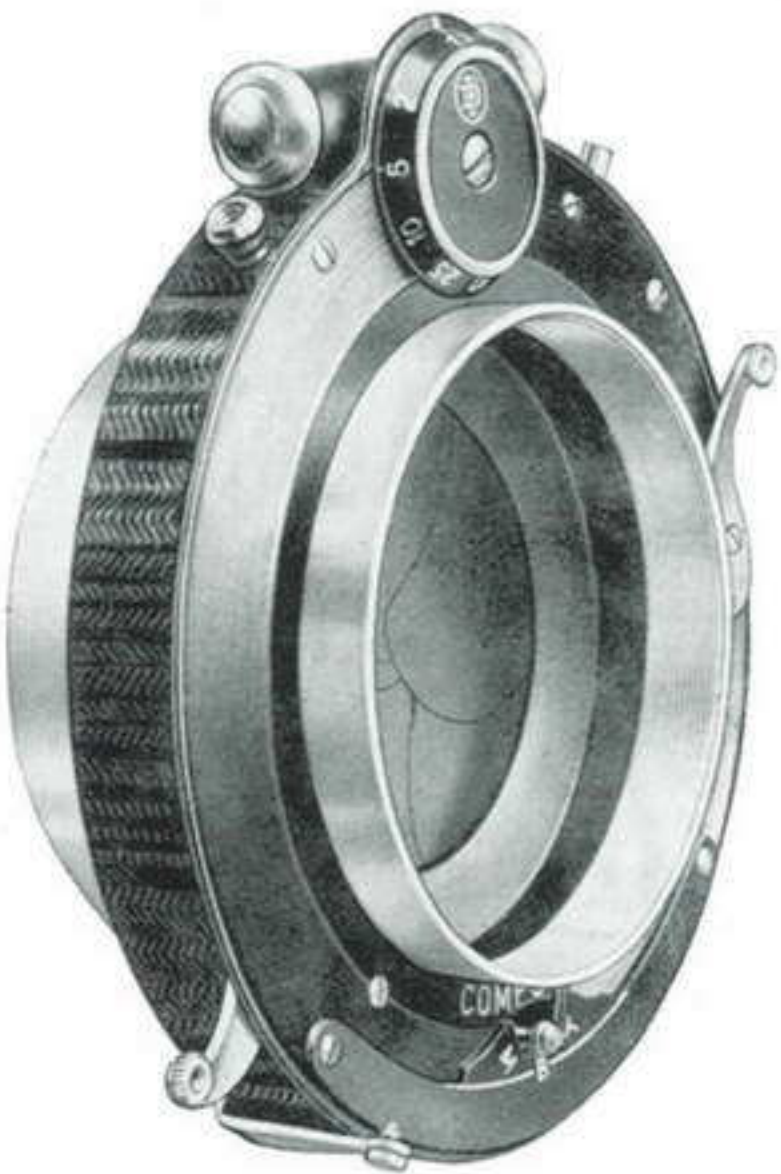
Shutter speeds: T, B, 1, 2, 5, 10, 25, 50, 100, 200 ● Tensioning and release lever; nipple for cable release ● Contact nipple on housing.

CN-1408-015



Dimens.	CN-1408-012	CN-1408-013	CN-1408-015
A	45,8	45,8	49,65
	x 40 t. p. i. (64°)		
B	50	50	55,80
	x 29 ¹ / ₁₃ t. p. i. (50°)		
C	35	25	30,80
D	14,6	8,3	12,20
E	35 φ		

Designation	Type No.	Synchronisation
COMPOUND 3-X Tube 7	CN-1509-000	X Contact
COMPOUND 4-X Tube 9	CN-1609-000	X Contact
COMPOUND 4-X Tube 10/II	CN-1609-012	X Contact
COMPOUND 5-X Tube 12/I	CN-1709-000	X Contact
COMPOUND 5-X Tube 12/II	CN-1709-011	X Contact



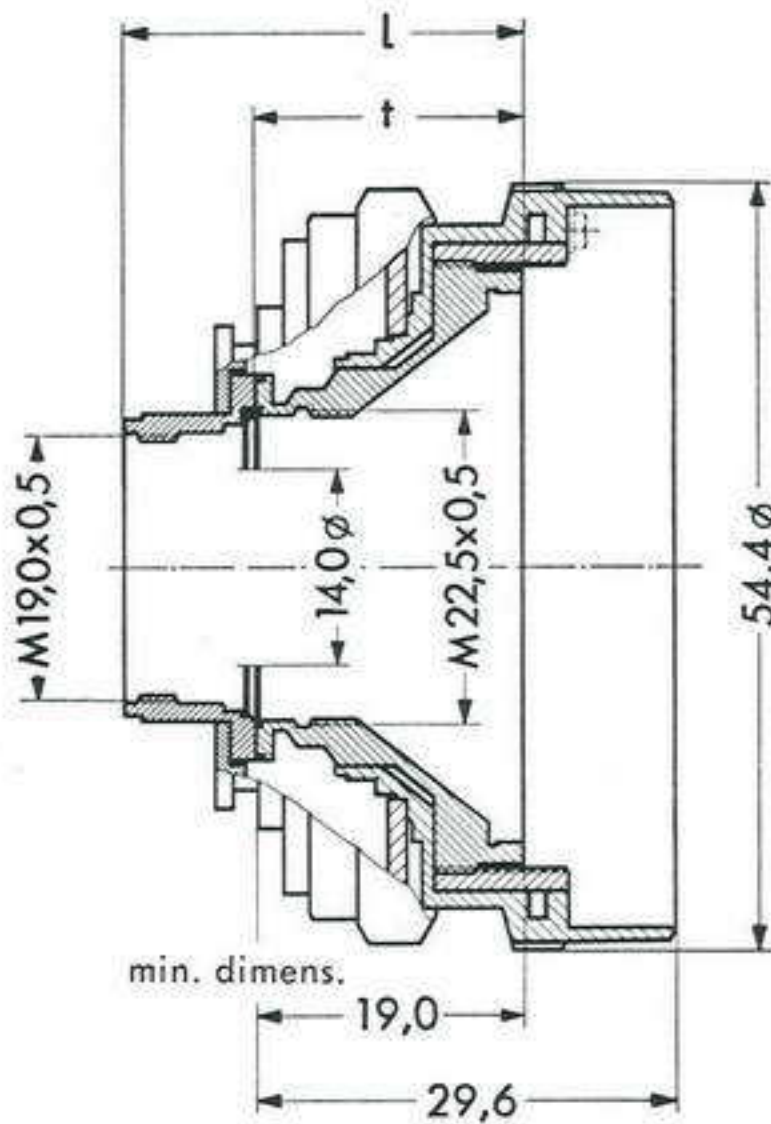
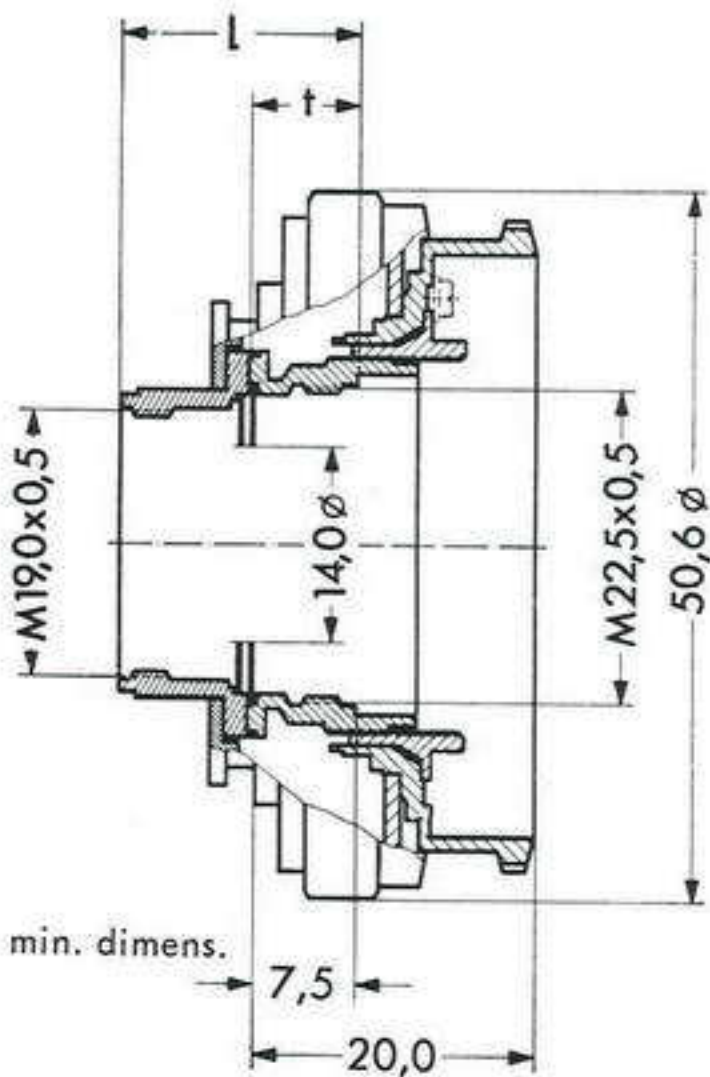
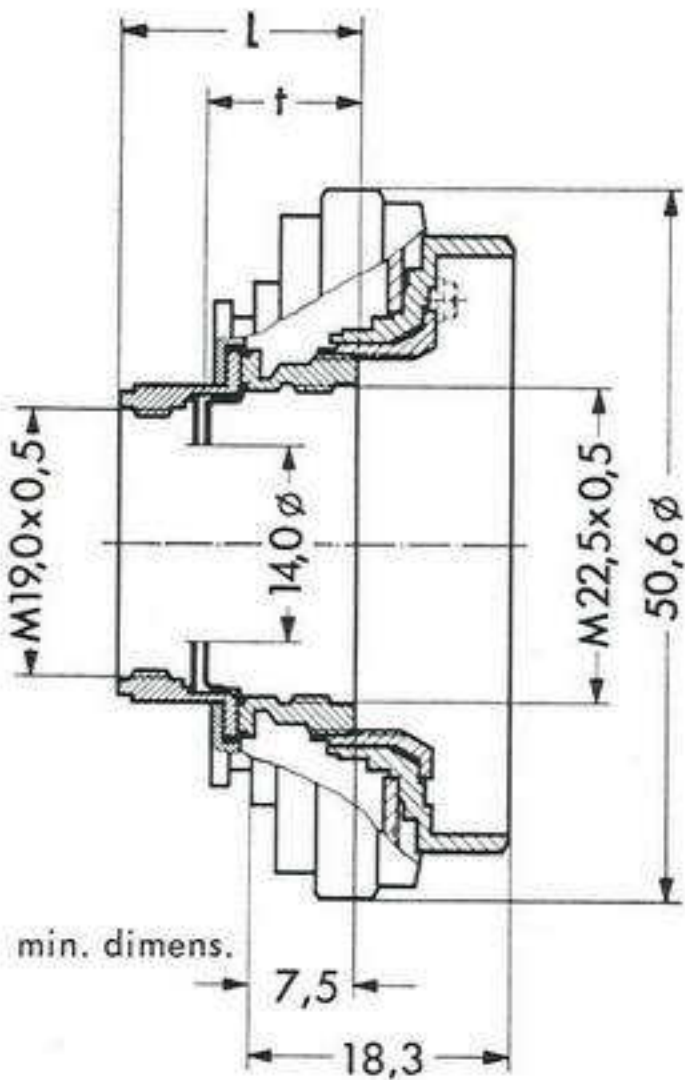
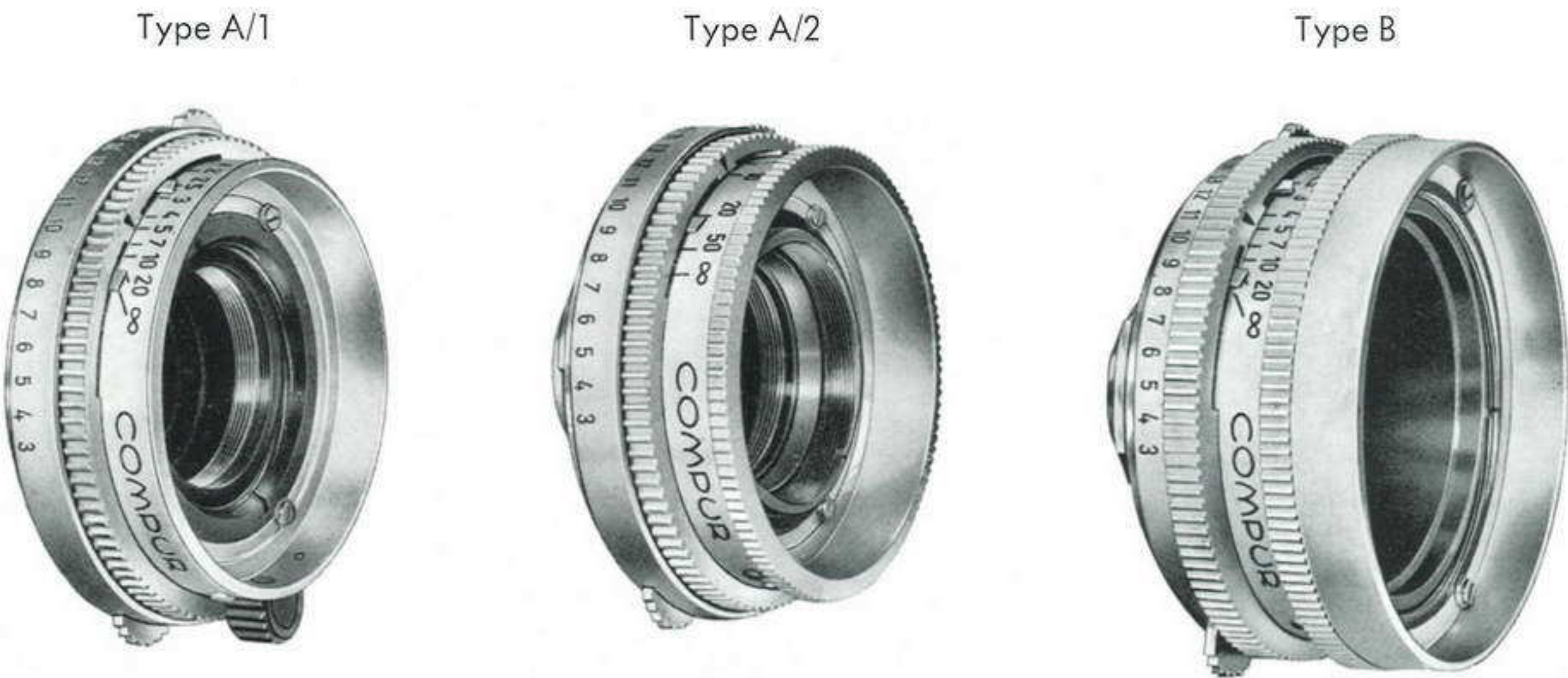
- Shutter speeds:
Type 1509: T, B, 1, 2, 5, 10, 25, 50, 75, 100
Type 1609: T, B, 1, 2, 5, 10, 25, 50, 75
Type 1709: T, B, 1, 2, 5, 10, 25, 50
- Tensioning and release lever; nipple for cable release
- Contact nipple on housing
- Shutter speeds controlled by pneumatic brake.

Dimens.	CN-1509-000	CN-1609-000	CN-1609-012	CN-1709-000	CN-1709-011
A	55,69	62,20	67,92	82,77	82,77
B	60	65,9	76,7	M 90,0	
C	40 ϕ	52 ϕ		64,5 ϕ	
D	87 ϕ	106 ϕ		125,5 ϕ	
E	37	50	45	74	60
F	15,7	21,8	19,3	33,2	25,2

Dimensions in mms.
 ϕ = diameter
 Dimensions are subject to alterations

SPECIFICATIONS OF COMPUR QUICK-CHANGE LENS MOUNTS
Size 00

These interchangeable lens mounts for shutters with enlarged diameter SYNCHRO-COMPUR 00-MXV CN-1110-030 without meter-coupling system are not anymore produced in series. New types of these models see page 5.



Dimensions in mms.
Ø = diameter
Dimensions are subject to alterations

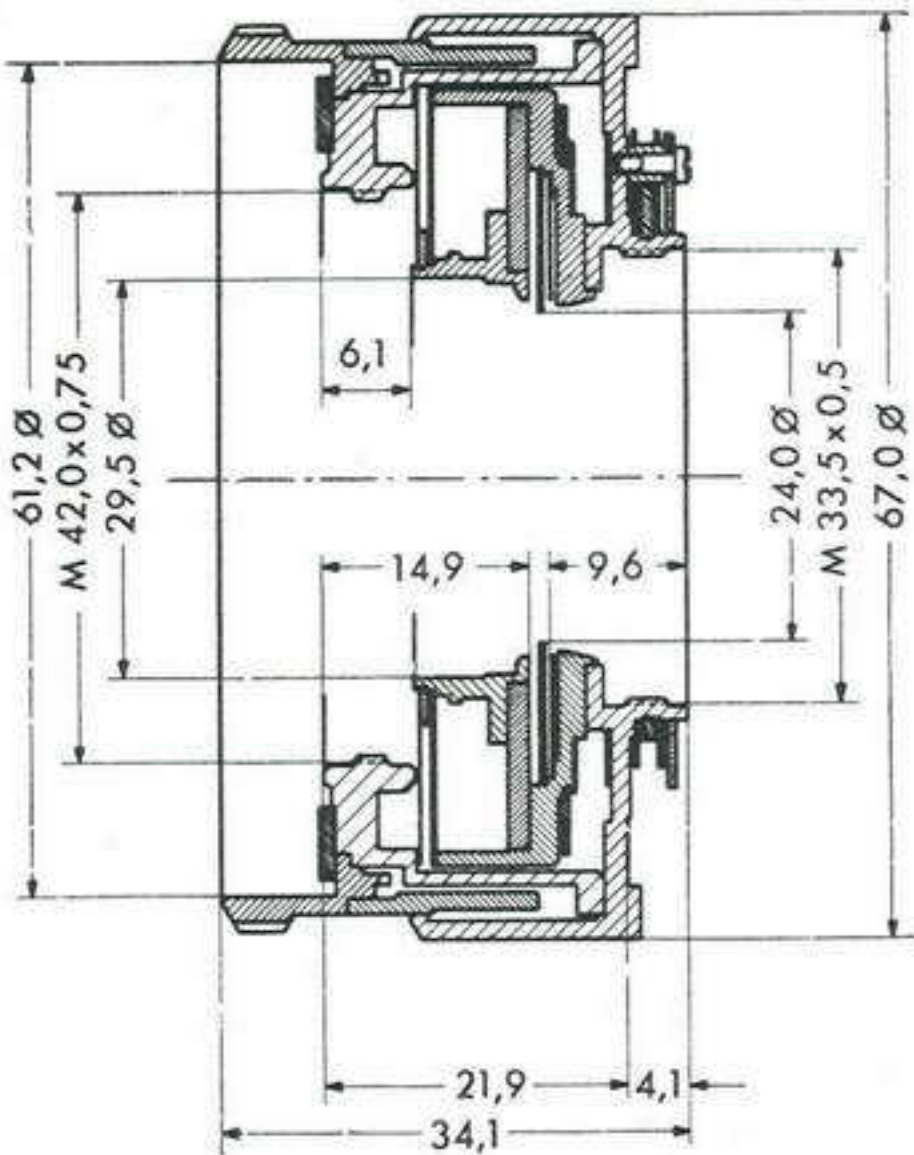
Designation	Type	Max. Focal Length approx.	Extension	Pitch	Possible range of f-stops	l	t
COMPUR Quick-Change Mount 00-GV with and without Rangefinder Cam	A/1	up to 35 50	4,2	5,0 7,0	2,8-16 2,8-22	14 and 17	8,5-10,9 or 7,7
	A/2	85 135	5,5	7,0 7,0	4,0-22 4,0-22	14 and 17	8,5-10,9 or 7,7
	B	up to 35 50 85 135	5,5	5,0 7,0 7,0 7,0	2,8-16 2,8-22 4,0-22 4,0-22	28,5 28,5 28,5 28,5	20,0-22,4 or 19,2

Automatic depth-of-field indicator ● with light value scale ● Light value setting when mounted in Synchro-Compur 00-MXV "Wide" CN-1110-030 ● with or without rangefinder cam.

COMPUR-TYPENÜBERSICHT Verschlußgröße 0

SPECIFICATIONS OF COMPUR SHUTTERS Size 0

Benennung Designation	Typen Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 0-MXV GH-Reflex	1210—022	X u. M Kontakt X and M Contacts



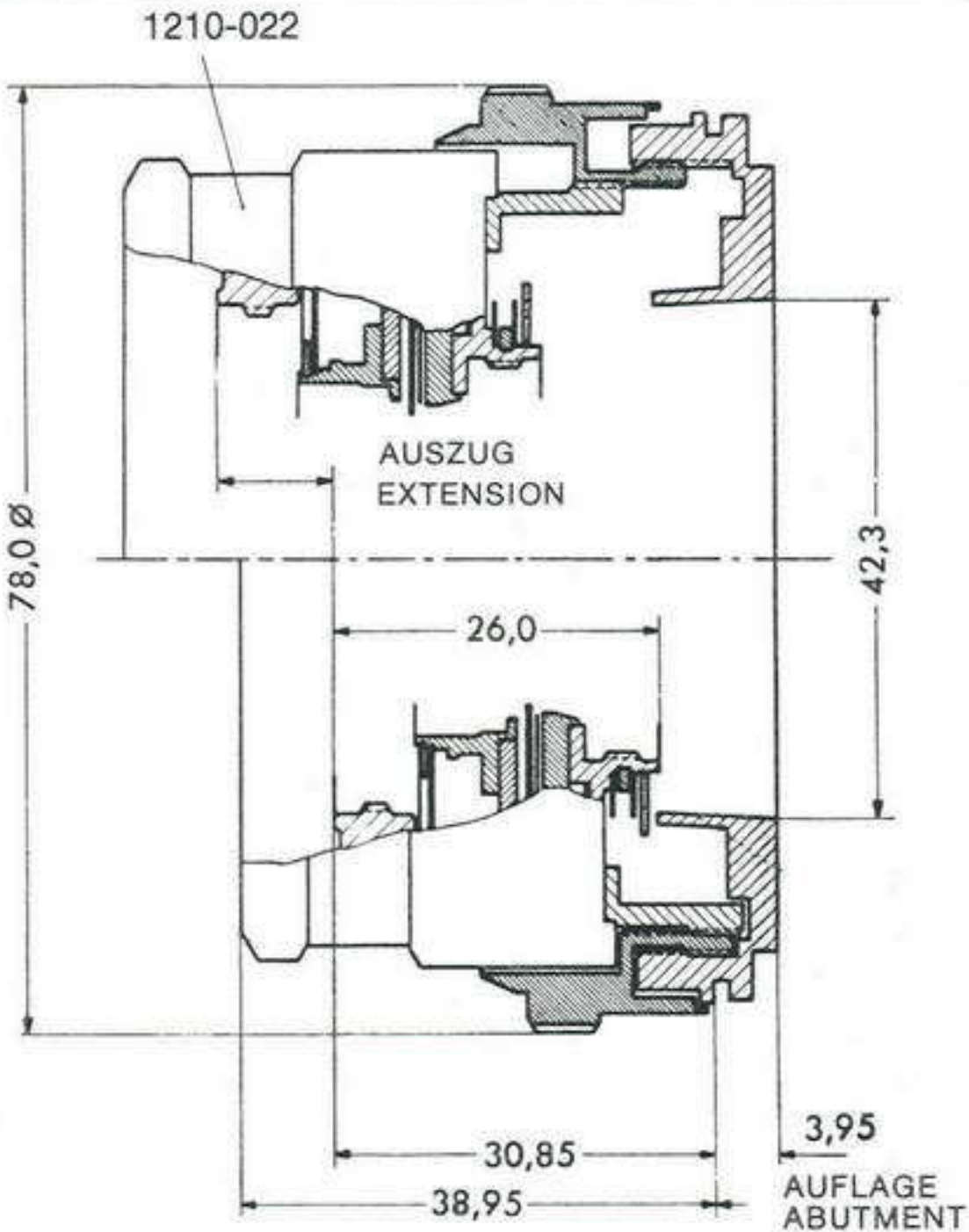
Maße nur zur Information — Änderungen vorbehalten
Dimensions in mms. Ø = diameter
Dimensions are subject to alterations



- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
 - Angabe der Zeitbelichtungswerte
 - Lichtwerteinstellung
 - Selbstauslöser
 - automatische Schärfentiefeanzeige
 - Vorwählspringblende
 - Sektorenöffnungseinrichtung
 - Blendenschließeinrichtung auf Wunsch
 - Einwellenantrieb
 - MX-Schaltringsperre
 - Kontaktnippel am Gehäuse.
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500

 - Exposure times indicated
 - Ligth value setting
 - Se'lft-timer
 - Automatic depth-of-field indicator
 - Automatic pre-set diaphragm
 - Diaphragm opening mechanism
 - Diaphragm closing mechanism optional
 - Single-shaft drive system
 - M-X selector ring lock
 - Contact nipple on housing.

Benennung Designation	Typen Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 0-MXV GH-Reflex-Wechsel	1210—040	X u. M Kontakt X and M Contacts



Brennweitenrichtwerte Max. Focal Length approx.	Auszug Extension	Steigung Pitch	mögl. Blende Possible range of f-stops
60 & 80	10.45 mm	12.0 mm (7.5—4.5)	2.8—22 2—16

Maße nur zur Information — Änderungen vorbehalten



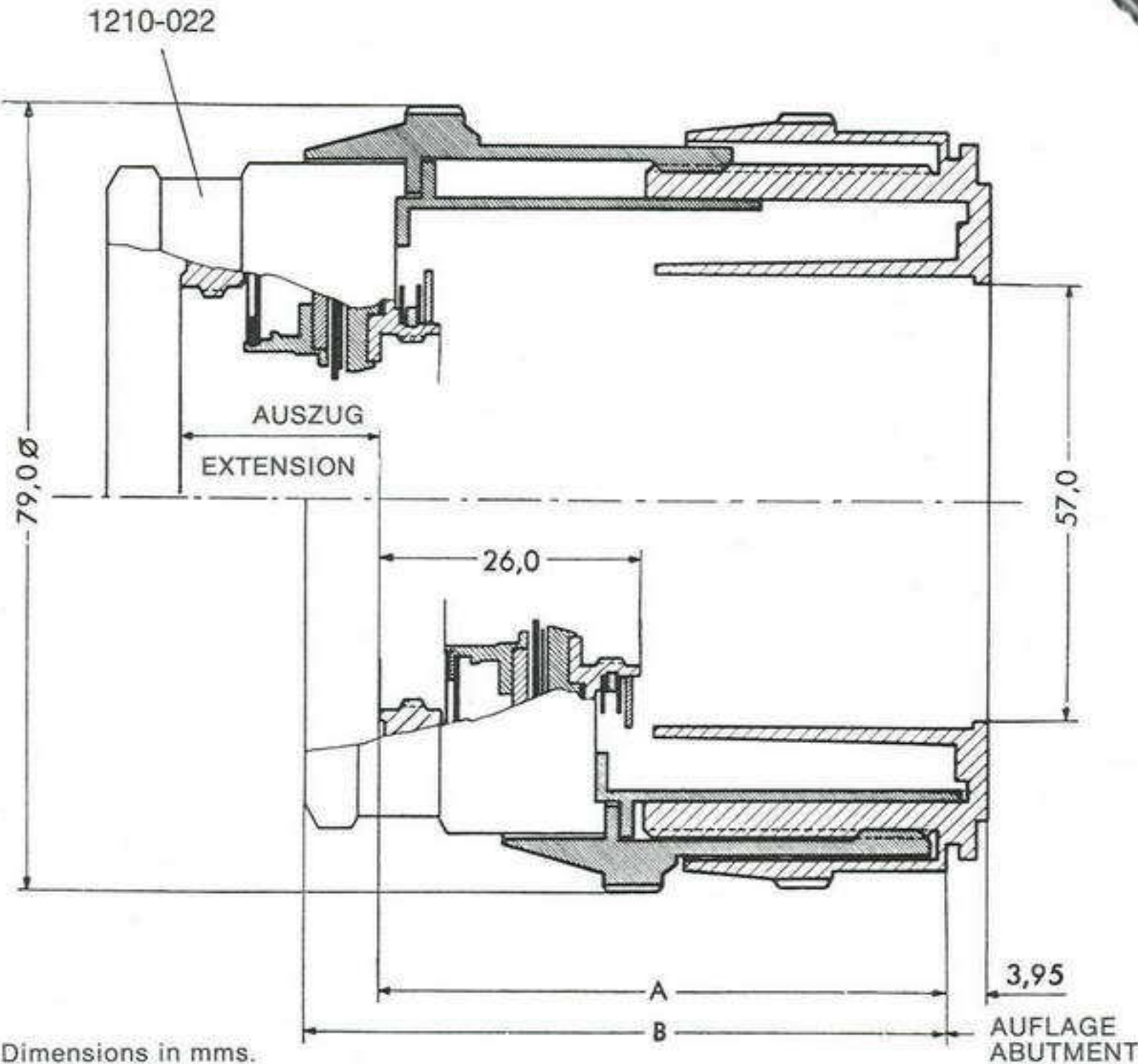
- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
 - Angabe der Zeitbelichtungswerte
 - Lichtwerteinstellung
 - Selbstauslöser
 - automatische Schärfentiefeanzeige
 - Vorwählspringblende
 - Sektorenöffnungseinrichtung
 - Blendenschließeinrichtung auf Wunsch
 - Einwellenantrieb mit Sperre
 - Entfernungseinstellung durch Schneckenzug
 - MX-Schaltringsperre
 - Kontaktnippel am Gehäuse
 - Bajonethalterung nach Wahl.
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500

 - Exposure times indicated
 - Light value setting
 - Self-timer
 - Automatic depth-of-field indicator
 - Automatic pre-set diaphragm
 - Diaphragm opening mechanism
 - Diaphragm closing mechanism optional
 - Single-shaft drive system with lock
 - Helical focusing mount
 - M-X selector ring lock
 - Contact nipple on housing
 - Choice of several types of bayonet mounts.

Benennung Designation	Typen Nr. Type No.	Synchronisierung Synchronisation
SYNCHRON-COMPUR 0-MXV GH-Reflex-Wechsel	1210—041	X u. M Kontakt X and M Contacts
	1210—042	X u. M Kontakt X and M Contacts
	1210—047	X u. M Kontakt X and M Contacts

● Verschlusszeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ●
 Angabe der Zeitbelichtungswerte ● LichtwertEinstellung ●
 Selbstauslöser ● automatische Schärfentiefeanzeige ● Vor-
 wahl-springblende ● Sektorenöffnungseinrichtung ● Blen-
 denschließeinrichtung auf Wunsch ● Einwellenantrieb mit
 Sperre ● Entfernungseinstellung durch Schneckenzug ●
 MX-Schaltringsperre ● Kontaktnippel am Gehäuse ● Bajo-
 netthalterung nach Wahl.

Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Expo-
 sure times indicated ● Light value setting ● Self-timer ●
 Automatic depth-of-field indicator ● Automatic pre-set dia-
 phragm ● Diaphragm opening mechanism ● Diaphragm
 closing mechanism optional ● Single-shaft drive system
 with lock ● Helical focusing mount ● M-X selector ring
 lock ● Contact nipple on housing ● Choice of several
 types of bayonet mounts ●



Dimensions in mms.
 Ø = diameter
 Dimensions are subject to alterations
 Maße nur zur Information — Änderungen vorbehalten

Type Type No.	Brennweitenrichtwerte Max. Focal Length approx.	Auszug Extension	Steigung Pitch	mögl. Blende Possible range of f-stops	A	B
1210—041	150	24,5	24	5,6—45 4—32	57,5	65,6
1210—042	250	37,2	34	8—64 5,6—45	81,95	90,05
1210—047	500	47,0	48	8—64 11—90	119,0	127,1

Maße in mm
 Dimensions in mms.

SPECIFICATIONS OF COMPUR QUICK-CHANGE LENS MOUNTS

Size 00

Page 5

CN-1111-851

Type A/1



Type A/2



Type B/1



CN-1111-863 Type C/1 and C/2



CN-1111-885/86 Type D/1



COMPUR Quick-Change Lens Mounts
with automatic depth-of-field indicator

for

SYNCHRO-COMPUR 00-MXV "Wide" and
"Wide Reflex" Shutters (types CN-1110-034 and
CN-1110-035)

for follow-up system (coupled light meter)

(Dimensions: see overleaf)

optionally as

"Standard" Mount

without rangefinder cam
without preset diaphragm

Mount for rangefinder cameras ¹⁾

with rangefinder cam
without preset diaphragm

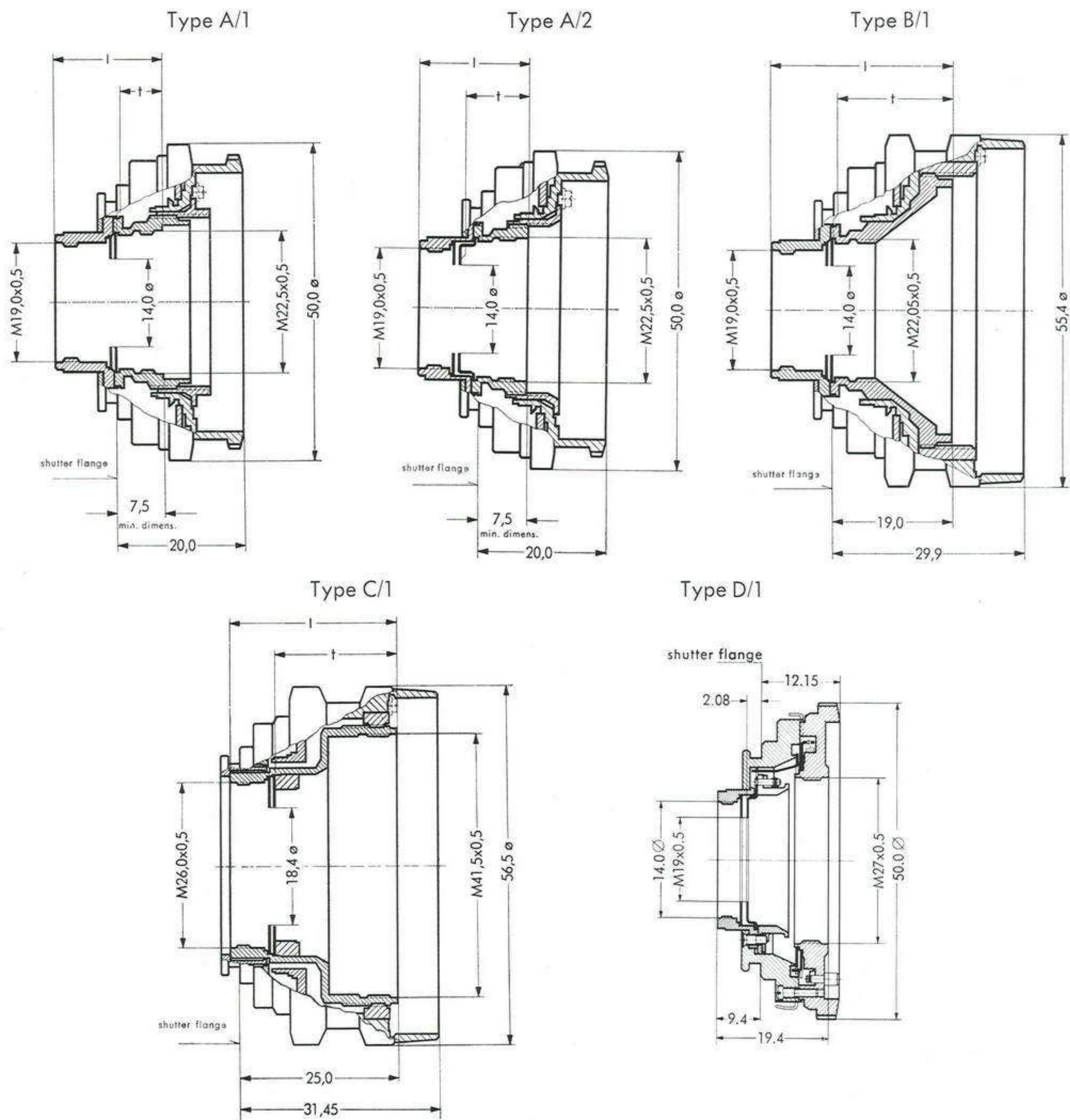
Mount for reflex cameras

without rangefinder cam
with preset diaphragm

"Combination" Mount ¹⁾

with rangefinder cam
with preset diaphragm

¹⁾ Not for type D/1 (CN-1111-885/86)



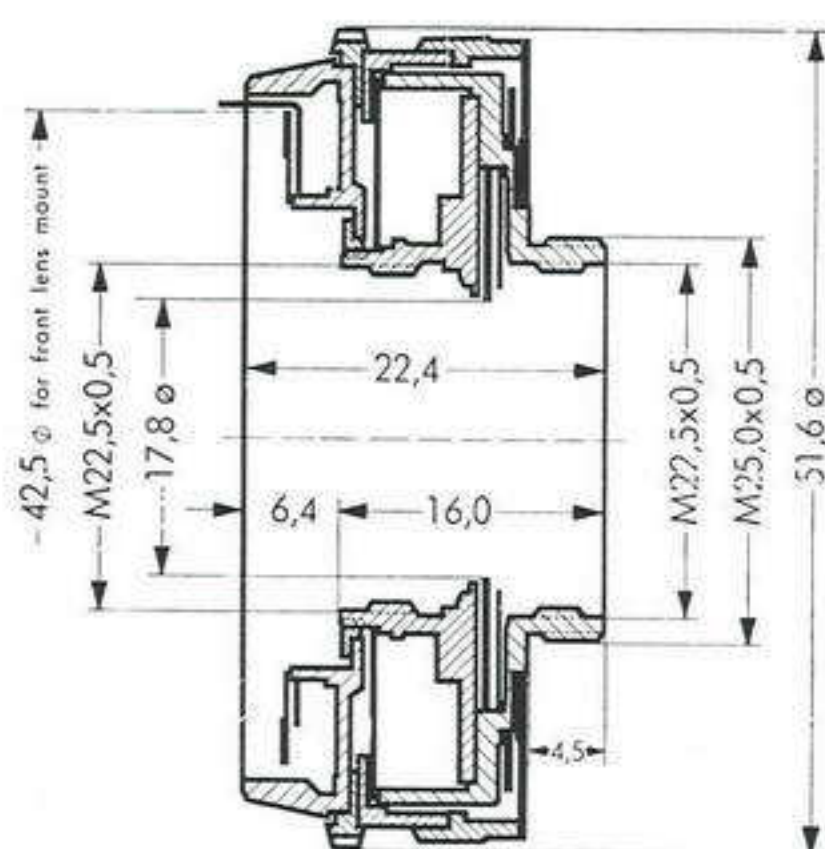
Type	Extension	Pitch	Possible f-stops	l	t	Observations			
A 1	4.2	7.0	14 ϕ -1.5 ϕ	14 and 17	8.5-10.9 or 7.7	special model for particularly heavy lenses	for lenses displaced as a unit for focusing		
A 2	5.5			28.5	20.0-22.4 or 19.2				
B 1			18.4 ϕ -1.5 ϕ					26.6	18.8-20.8
C 1									
C 2									
D 1	—	—	14 ϕ -1.5 ϕ	19.4	2.08	for front cell focusing lenses			

SPECIFICATIONS OF COMPUR SHUTTERS

Size 00
for follow-up systems (coupled light meter)

Page 6

Designation	Type No.	Synchronisation
SYNCHRO-COMPUR 00-MXV "Standard"	CN-1110-018	X and M Contacts



Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

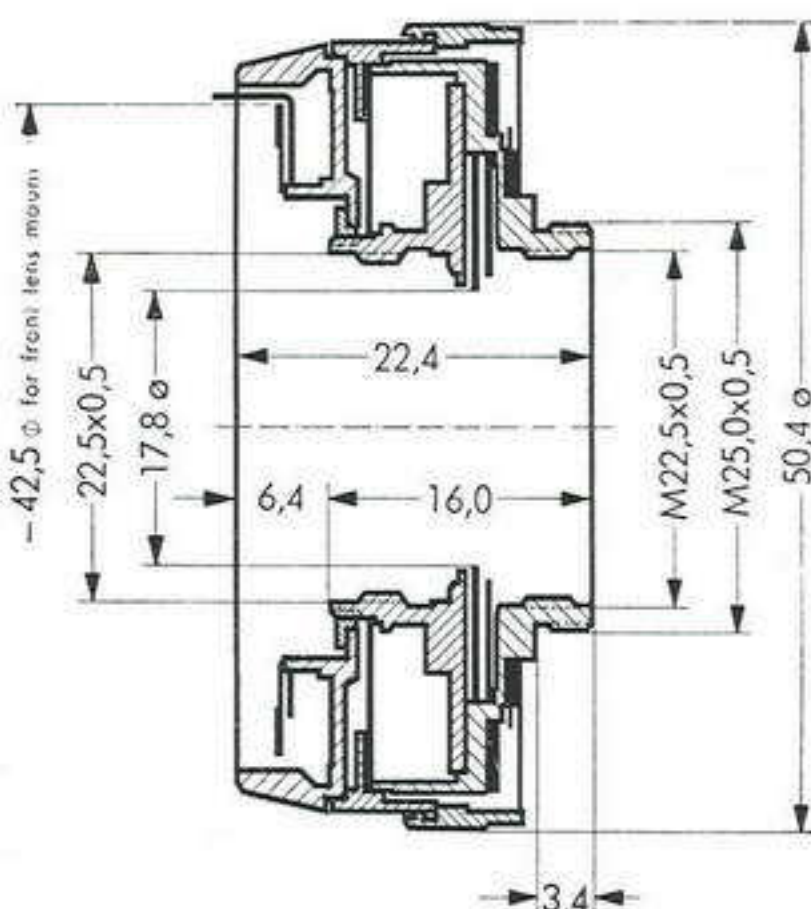
"Standard" 010 for front lens systems additionally provided with automatic depth-of-field indicator.



COMPUR-RAPID model
(without M contact)
derived from basic
SYNCHRO-COMPUR design

Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 • Exposure times indicated • for follow-up systems light value scale • Self-timer • Detent grooves for M-X lock on camera body • Tensioning and release shaft • Contact lug at rear • Through hole for range-finder shaft • Automatic depth-of-field indicator for front lens systems.

Designation	Type No.	Synchronisation
SYNCHRO-COMPUR 00-MXV "Standard"	CN-1110-016	X and M Contacts



Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

"Standard" 018 additionally provided with shutter speed and f-stop combination selector (for follow-up systems)



Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 • Exposure times indicated • for follow-up systems light value scale • shutter speed and f-stop combination selector • Self-timer • Detent grooves for M-X lock on camera body • Tensioning and release shaft • Contact lug at rear • Through hole for rangefinder shaft • Auto-matic depth-of-field indicator for front lens systems.

COMPUR-TYPENÜBERSICHT

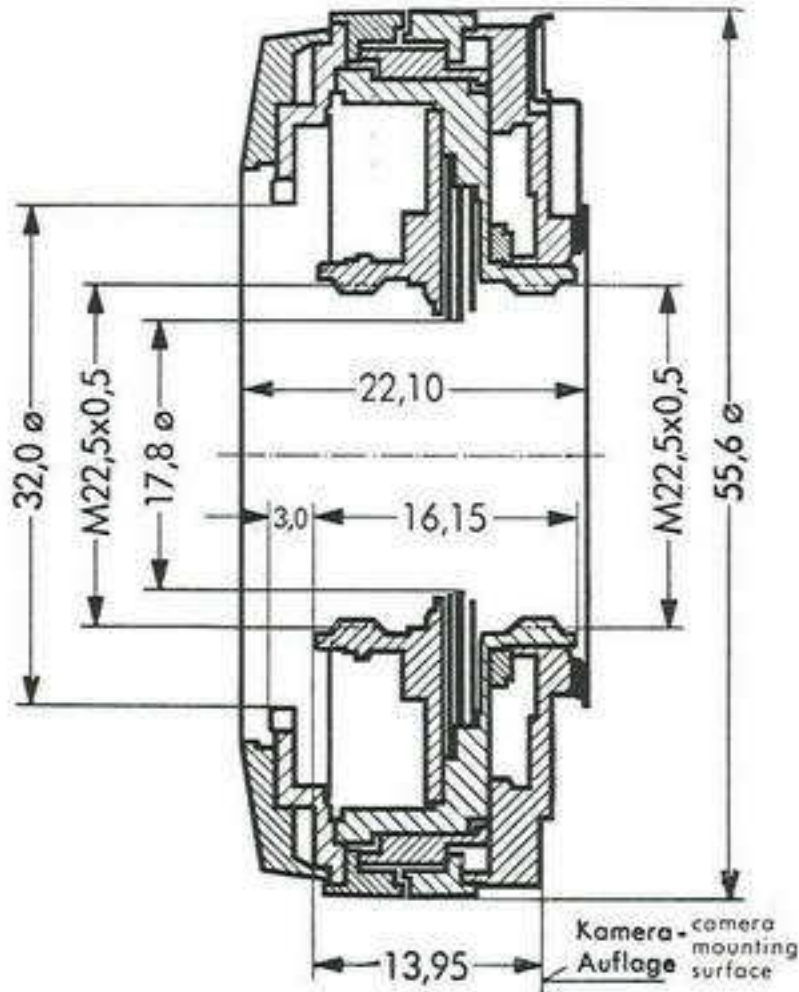
Verschlußgröße 00 mit Lichtwertnachführung

SPECIFICATIONS OF COMPUR SHUTTERS

Size 00 for follow-up systems (coupled light meter)

Blatt 7

Benennung Designation	Typen-Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 00-MXV BH-Reflex	CN-1110-024	X- u. M-Kontakt X and M Contacts



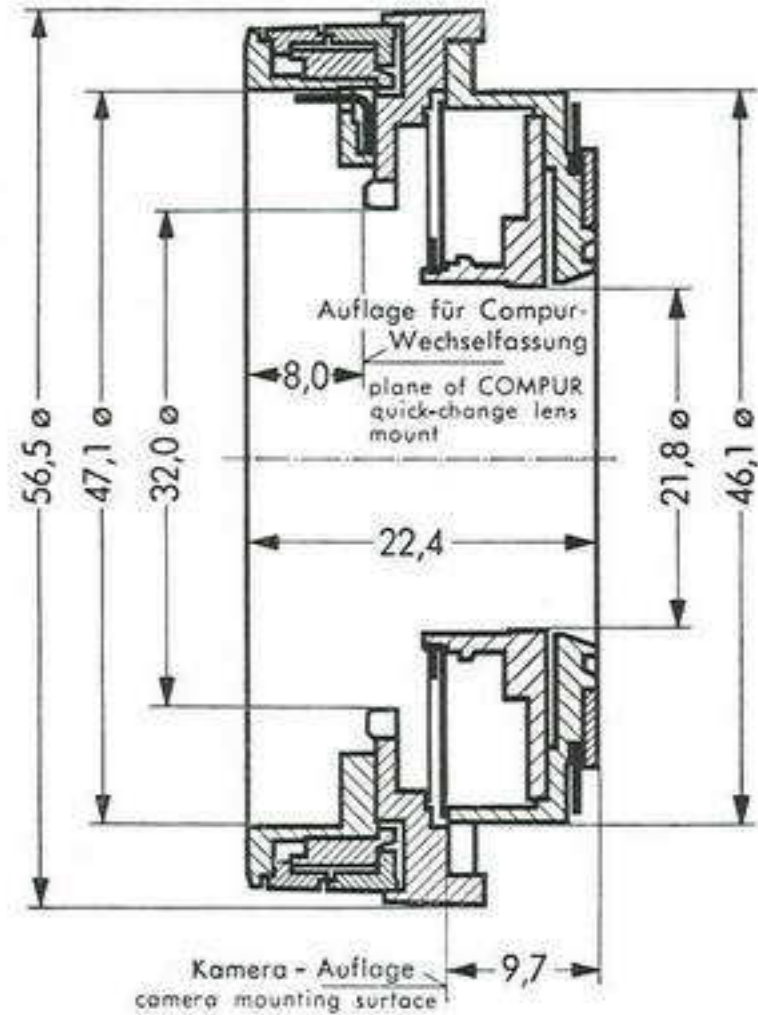
Maße nur zur Information
Änderungen vorbehalten.
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

BH-Reflex-020 ergänzt mit automatischer Schärfentiefeanzeige für Gesamtverstellung, Lichtwertnachführung und Kombinationswähler.
"Bayonet-Mount Reflex" 020 for interchangeable front lens components additionally provided with automatic depth-of-field indicator; shutter speed and f-stop combination selector for follow-up systems.



- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
 - Angabe der Zeitbelichtungswerte
 - Lichtwertnachführung für gekuppelten B-Messer
 - Kombinationswähler
 - Selbstauslöser
 - MX-Schaltringsperre
 - Spann- und Auslösewelle
 - Kontaktfahne an der Rückseite
 - automatische Schärfentiefeanzeige für Gesamtverstellung
 - starrer Objektivträger
 - Bajonethalterung mit Riegel für Vordergliedwechsel
 - Sektorenöffnungseinrichtung
 - Vorwahlspringblende.
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
- Exposure times indicated
 - for follow-up systems
 - shutter speed and f-stop combination selector
 - Self-timer
 - M-X selector ring lock
 - Tensioning and release shaft
 - Contact lug at rear
 - automatic depth-of-field indicator for interchangeable front lens sections
 - Rigid lens mount
 - Bayonet-mount with lock for interchangeable front lens components
 - Shutter opening device
 - preset diaphragm.

Benennung Designation	Typen-Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 00-MXV Weit Wide	CN-1110-034	X- u. M-Kontakt X and M Contacts
SYNCHRO-COMPUR 00-MXV Weit-Reflex Wide-Reflex	CN-1110-035	X- u. M-Kontakt X and M Contacts



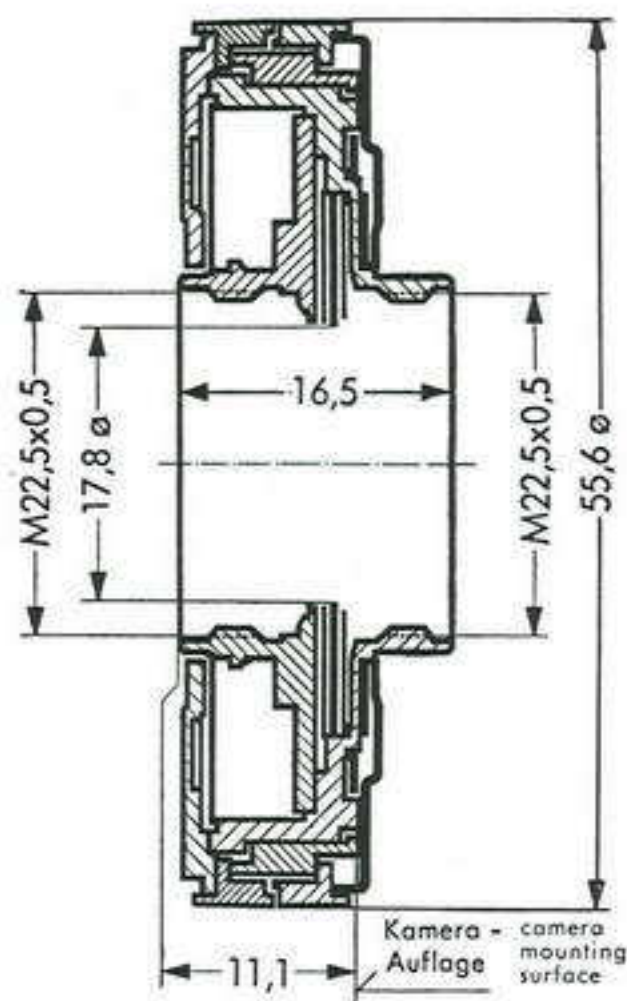
Maße nur zur Information
Änderungen vorbehalten
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

Weit-030 ergänzt mit Lichtwertnachführung und Kombinationswähler. Weit-Reflex zusätzlich mit Sektorenöffnungseinrichtung. In Verbindung mit COMPUR-Wechselfassung, Vorwahlspringblende.
"Wide" 030 additionally provided with shutter speed and f-stop combination selector for follow-up systems. "Wide-Reflex" with supplementary shutter opening device. Together with COMPUR quick-change lens mount: preset diaphragm and automatic depth-of-field indicator.



- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
 - Angabe der Zeitbelichtungswerte
 - Lichtwertnachführung für gekuppelten B-Messer
 - Kombinationswähler
 - Selbstauslöser
 - MX-Schaltringsperre
 - Spann- und Auslösehebel
 - Kontaktfahne an der Rückseite
 - weiter Durchgang
 - ohne Blende
 - starrer Objektivträger
 - Bajonethalterung mit Riegel für COMPUR-Wechselfassung
 - Durchgangsloch für E-Messer-Steuerung.
- Weit-Reflex zusätzlich mit Sektorenöffnungseinrichtung.
In Verbindung mit COMPUR-Wechselfassung, automatische Schärfentiefeanzeige
- E-Messer-Steuerung
 - Vorwahlspringblende.
- (Siehe auch COMPUR-Typen-Übersicht, Blatt 5)
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
- Exposure times indicated
 - for follow-up systems
 - shutter speed and f-stop combination selector
 - Self-timer
 - M-X selector ring lock
 - Tensioning shaft and release lever
 - Contact lug at rear
 - Large inside diameter
 - No diaphragm
 - Rigid lens mount
 - Bayonet-mount with lock for COMPUR quick-change lens mounts
 - Through hole for rangefinder shaft.
- "Wide-Reflex" with supplementary shutter opening device.
Together with COMPUR quick-change lens mount: automatic depth-of-field indicator
- rangefinder shaft
 - preset diaphragm.
- (See specifications of COMPUR quick-change lens mounts, page 5).

Benennung Designation	Typen-Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 00-MXV Standard	CN-1110-025	X- u. M-Kontakt X and M Contacts
COMPUR-RAPID 00-XV Standard	CN-1112-025	nur X-Kontakt X Contact only



Standard-010 ergänzt mit Anschluß für Lichtwertnachführung, Kombinationswähler, MX-Schaltringsperre.

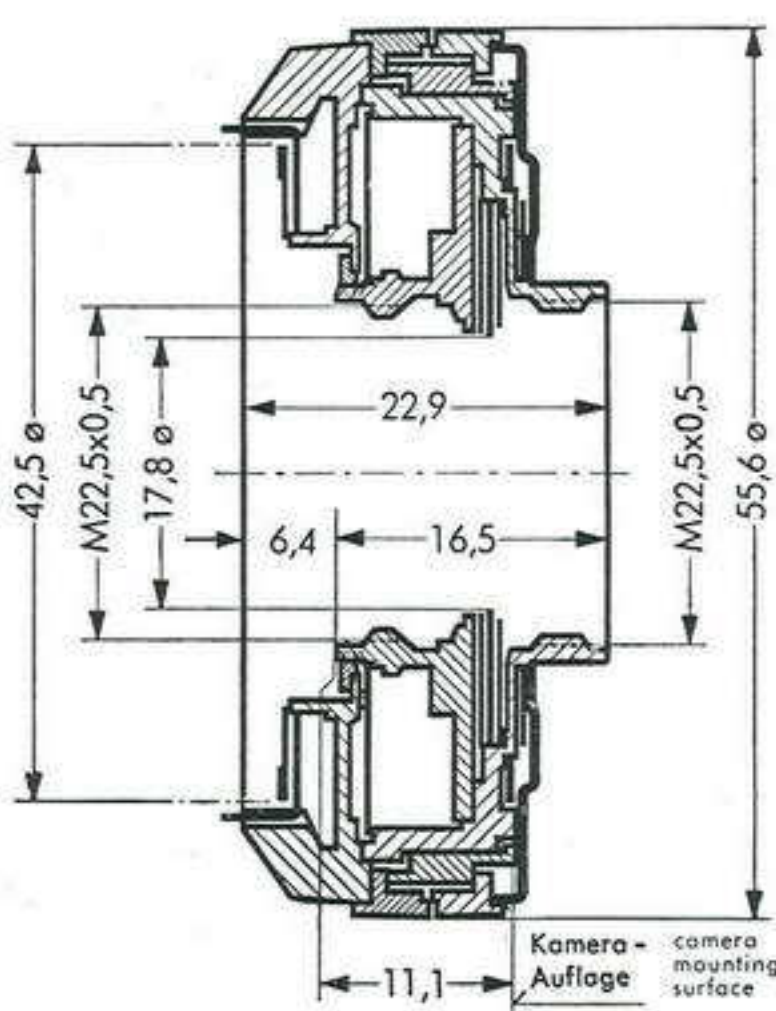
"Standard" 010 additionally provided with light value control for follow-up systems; shutter speed and f-stop combination selector; M-X selector ring lock.

- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
- Angabe der Zeitbelichtungswerte
- Anschluß für Lichtwertnachführung für gekuppelten B-Messer
- Kombinationswähler
- Selbstauslöser
- MX-Schaltringsperre
- Spann- und Auslösewelle
- Kontaktfahne an der Rückseite
- Durchgangsloch für E-Messer-Steuerung
- Frontplatte nach Wahl.

Maße nur zur Information
Änderungen vorbehalten
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
- Exposure times indicated
- for follow-up systems
- shutter speed and f-stop combination selector
- Self-timer
- M-X selector ring lock
- Tensioning and release shaft
- Contact lug at rear
- Through hole for rangefinder shaft
- Choice of several front plates.

Benennung Designation	Typen-Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 00-MXV Standard	CN-1110-026	X- u. M-Kontakt X and M Contacts



Standard-025 ergänzt mit automatischer Schärfentiefeanzeige für Frontlinsenverstellung.

"Standard" 025 additionally provided with automatic depth-of-field indicator for non-interchangeable front lens systems.

- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
- Angabe der Zeitbelichtungswerte
- Anschluß für Lichtwertnachführung für gekuppelten B-Messer
- Kombinationswähler
- Selbstauslöser
- MX-Schaltringsperre
- Spann- und Auslösewelle
- Kontaktfahne an der Rückseite
- Durchgangsloch für E-Messer-Steuerung
- automatische Schärfentiefeanzeige für Frontlinsenverstellung.

Maße nur zur Information
Änderungen vorbehalten
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500
- Exposure times indicated
- for follow-up systems
- shutter speed and f-stop combination selector
- Self-timer
- M-X selector ring lock
- Tensioning and release shaft
- Contact lug at rear
- Through hole for rangefinder shaft
- automatic depth-of-field indicator for non-interchangeable front lens systems.

COMPUR-TYPENÜBERSICHT

Verschlußgröße 00 mit Lichtwertnachführung

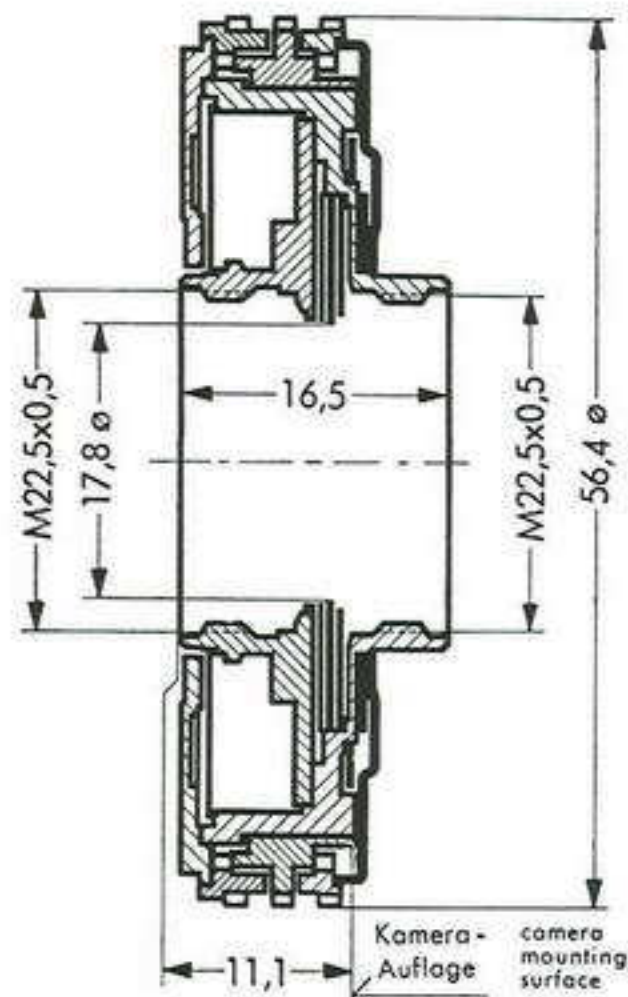
SPECIFICATION OF COMPUR SHUTTERS

Size 00 for follow-up systems (coupled light meter)

Blatt 8

Page 8

Benennung Designation	Typen-Nr. Type No.	Synchronisierung Synchronisation
SYNCHRO-COMPUR 00-MXV mit verzahnten Einstellringen with segmented setting rings	CN-1110-019	X- u. M-Kontakt X and M Contacts



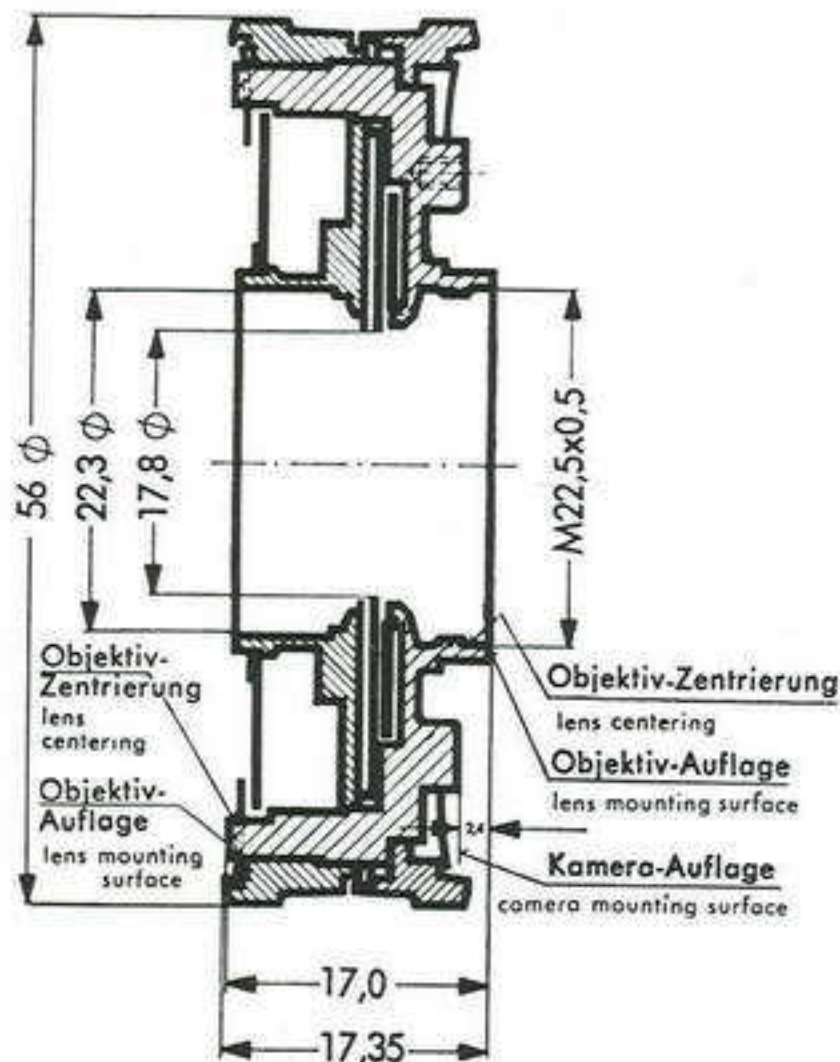
Maße nur zur Information
Änderungen vorbehalten.
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

Standard-025 als Sondermodell für verdeckten Einbau mit verzahnten Einstellringen.
Special shutter model developed from "Standard" 025 ● Shutter is arranged behind the lens in camera body ● Speed and aperture setting elements are linked with setting means located on camera front.

- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Einstellung für Zeitbelichtungswerte ● Anschluß für kontinuierlichen Lichtwertsteller über Stegtring (verzahnter Mittelring) für gekoppelten B-Messer ● Kombinationswahl ● Selbstauslöser ● MX-Schaltringsperre ● Spann- und Auslösewelle ● Kontaktfahne an der Rückseite ● Durchgangsloch für E-Messer-Steuerung ● Außenverzahnungen am Zeit-, Blenden- und Stegtring.
- Diese Verschußtype befindet sich nicht mehr in Serienproduktion.
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Exposure times indicated ● for follow-up systems: intermediate ring of shutter engages with toothed segments on light value setting elements on camera (camera and light meter elements) ● Combination shutter speed and f-stop selection ● Self-timer ● M-X selector ring lock ● Tensioning and release shaft ● Contact lug at rear ● Through hole for rangefinder shaft ● Exposure control ring, aperture control ring, and intermediate ring are provided with external toothings.
- This shutter type is not anymore manufactured in series.



Benennung Designation	Typen-Nr. Type No.	Synchronisierung Synchronisation
COMPUR 00-XV mit Lichtwertnachführung und Filmwerteinstellung with meter coupling system and film speed setting	CN-1112-004	nur X-Kontakt X Contact only



Maße nur zur Information
Änderungen vorbehalten.
Dimensions in mms.
φ = diameter
Dimensions are subject to alterations

- Verschußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Anschluß für Lichtwertnachführung für gekoppelten B-Messer (durch Taststift) ● Spann- und Auslösewelle ● Kontaktfahne an der Rückseite ● Filmwerteinstellung ● Spannhebel für Selbstauslöser.
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Shutter setting is transmitted to exposure meter by tracer of control cam ● Tensioning and releasing shaft ● X contact at rear ● film speed setting ● Tensioning lever for self-timer.



COMPUR-TYPENÜBERSICHT

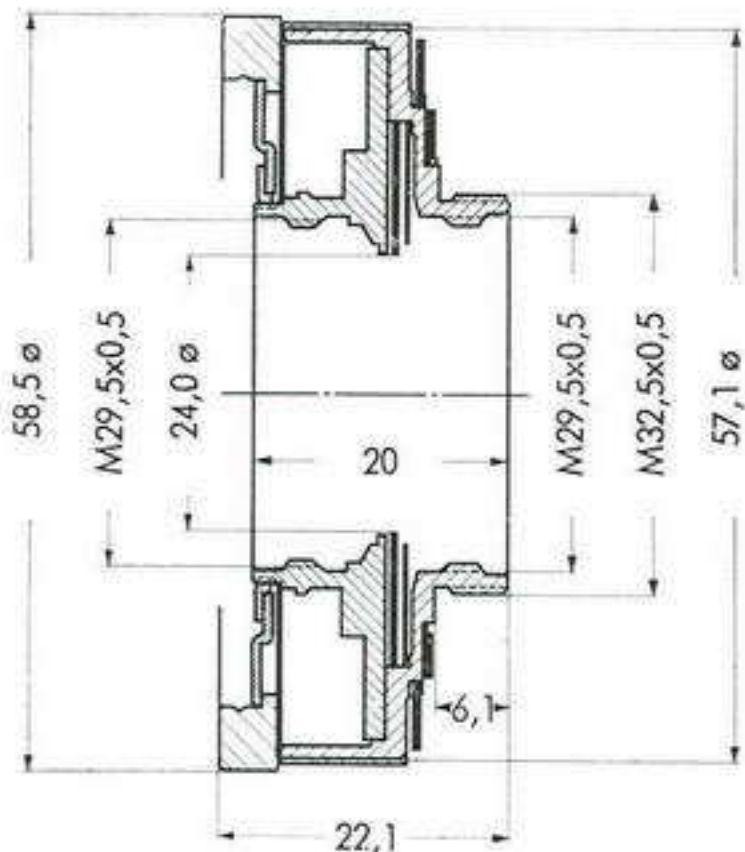
Verschlußgröße 0 mit
Sektorenöffnungseinrichtung

SPECIFICATIONS OF COMPUR SHUTTERS

Size 0 Shutters with blade opening mechanism

Blatt 9
Page 9

Benennung Description	Typen-Nr. Model Number	Synchronisierung Synchronization
SYNCHRO-COMPUR 0-MXV mit Sektorenöffnungs- einrichtung with blade opening mechanism	1210—051	X- u. M-Kontakt X and M contacts

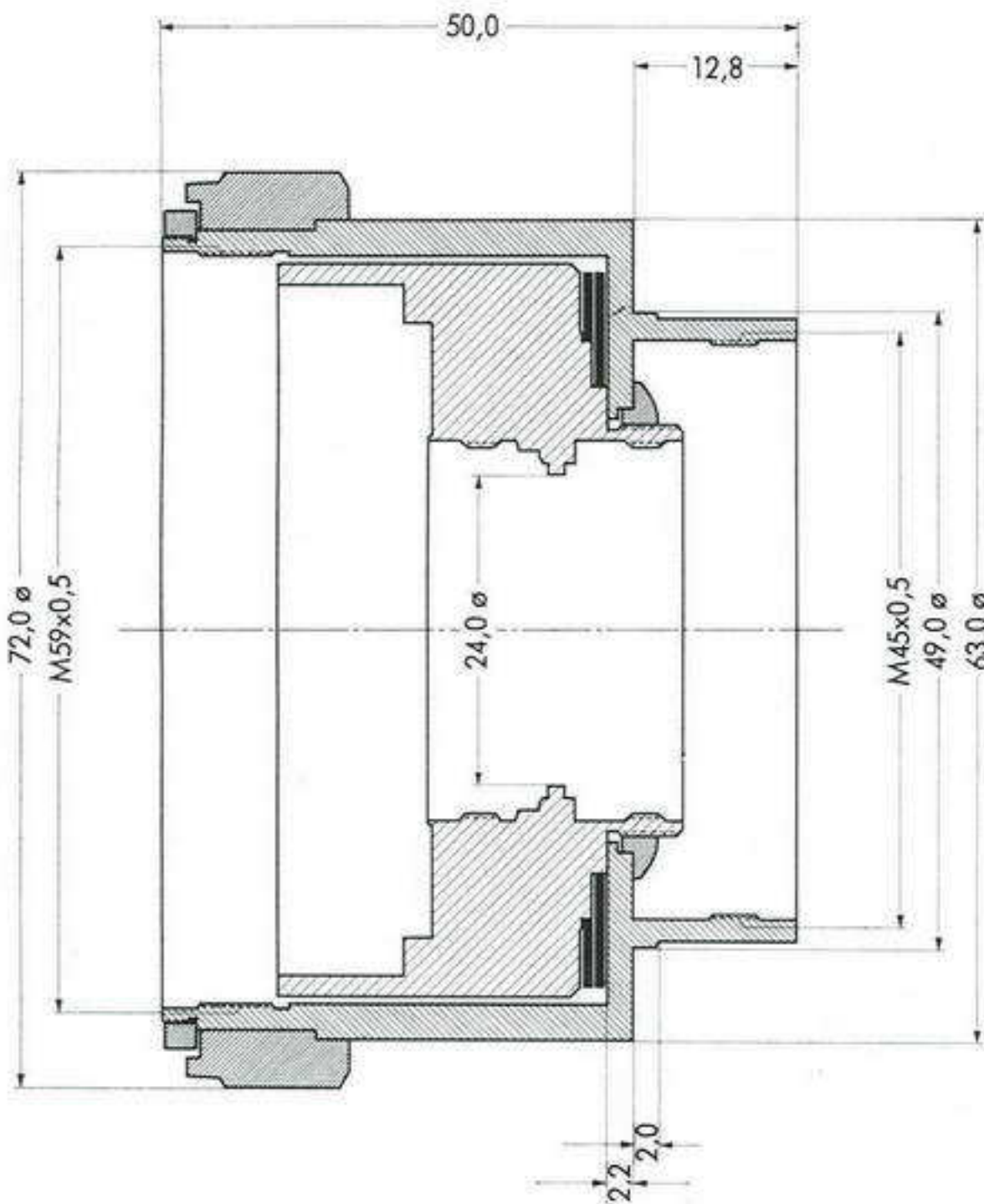


Maße nur zur Information — Änderungen vorbehalten.
Dimensions in mm.
φ = diameter / Dimensions are subject to alterations



- Verschlußzeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 •
- Selbstausröser • Spannungring • Auslösehebel, Anschluß-
nippel für Drahtauslöser • Sektorenöffnungshebel • Kon-
takt nippel am Gehäuse • Blendenrasten •
- Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 • Self-
timer • Tensioning ring • Release lever, contact nipple for
cable release • Blade opening mechanism • Contact
nipple on housing • f-stop click stops.

Benennung Description	Typen-Nr. Model Number	Synchronisierung Synchronization
SYNCHRO-COMPUR 0-MXV mit Sektorenöffnungs- einrichtung und Tragfassung with blade opening mechanism and carrier mount	1210—660	X- u. M-Kontakt X and M contacts

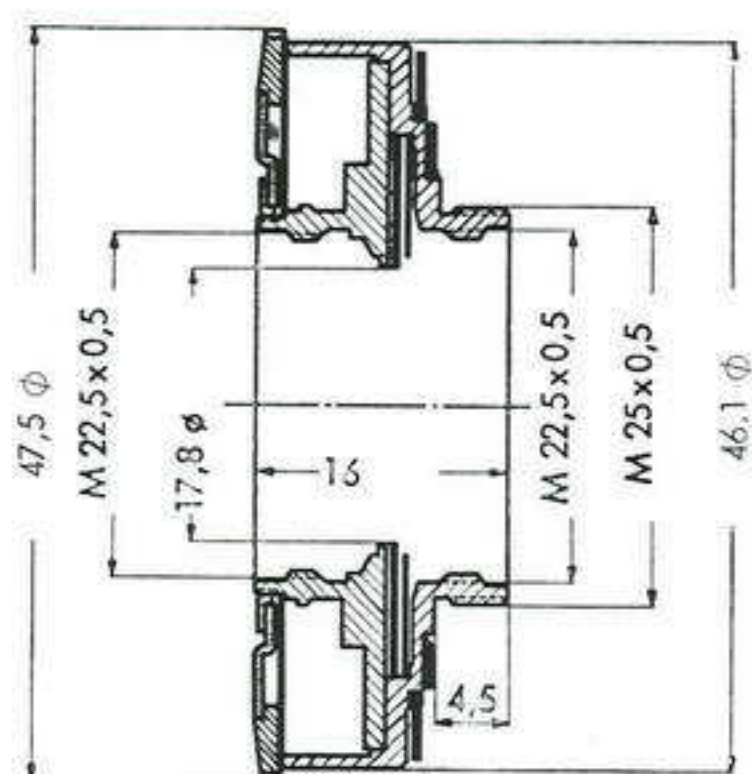


Dieser Spezialverschluß ist in seinem Aufbau
und in den Funktionen gleich wie 1210—051 je-
doch ohne Blendenringrasten.

The design and functions of this special shutter
are the same as those of 1210—051, but with-
out the diaphragm ring click stops.

Maße nur zur Information
— Änderungen vorbehalten.
Dimensions in mm. / φ = diameter
Dimensions are subject to alterations

Benennung Designation	Typen-Nr. Model Number	Synchronisierung Synchronization
SYNCHRO-COMPUR 00-MXV Spannring Tensioning ring	1110—002	X- u. M-Kontakt



● Verschlusszeiten: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ●
 Selbstauslöser ● Spannring, Auslösehebel ● Spann- und
 Auslösesperre ● Kontaktnippel am Gehäuse mit Drahtaus-
 lösernippel ● Blendenskalaschild ohne Gravur ● Durch-
 gangsloch für E-Messer-Steuerung möglich ● Frontplatte
 nach Wahl

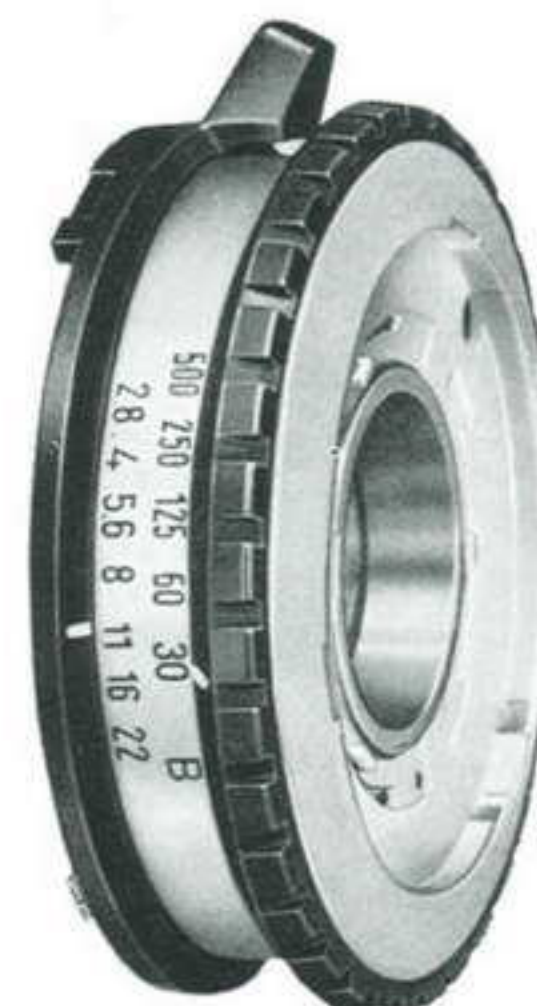
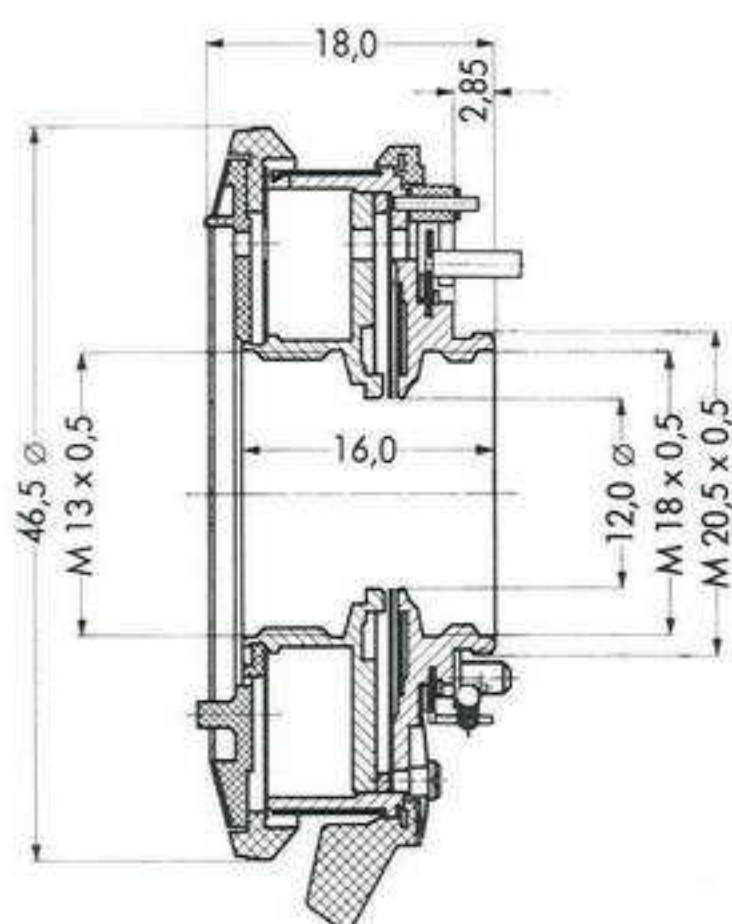
● Shutter speeds: B, 1, 2, 4, 8, 15, 30, 60, 125, 250, 500 ● Self-
 timer ● Tensioning ring, release lever ● Tensioning and
 trigger lock ● Flash terminal on housing ● With cable
 release socket ● Diaphragm scale not engraved ● Possi-
 bility of providing through-hole for rangefinder control ●
 Choice of several front plates.

SPECIFICATIONS OF COMPUR SHUTTERS

Size 000

Page 10

Designation	Model No.	Synchronization
COMPUR 000-X	CN-1914-000*) CN-1914-001	X contact

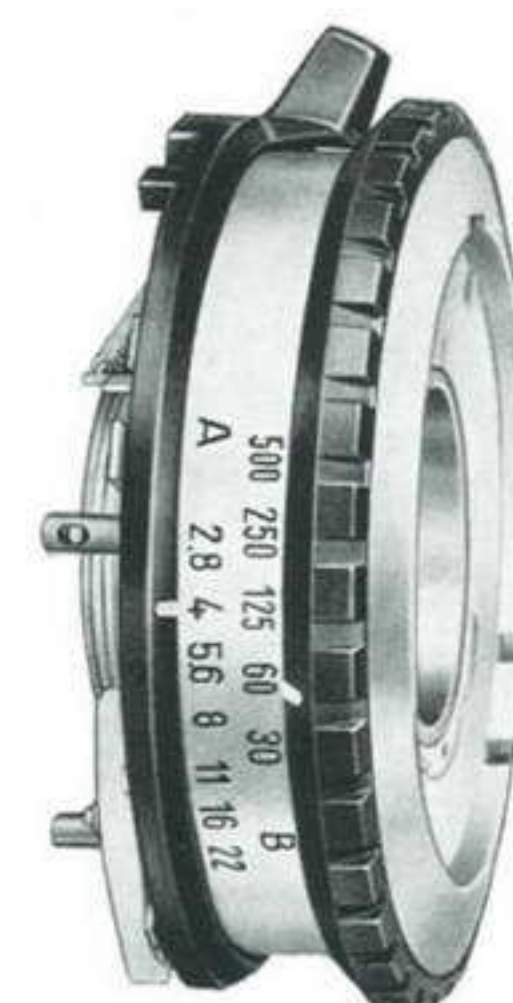
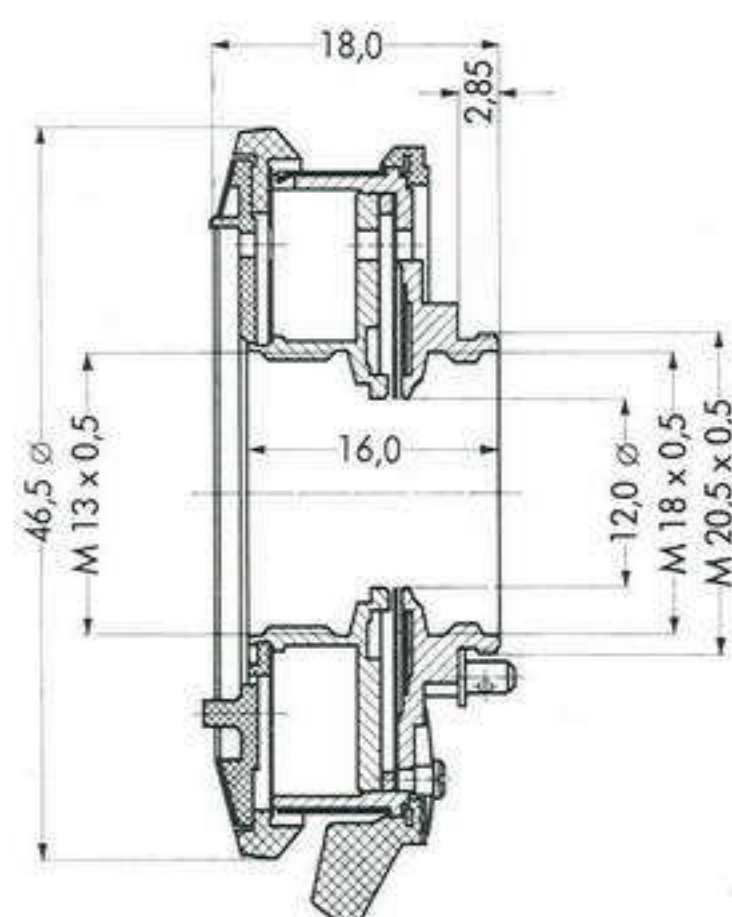


- Shutter speeds: B, 30, 60, 125, 250, 500
- Tensioning shaft, release lever
- Flash terminal at rear

Dimensions are in millimeters and for information only. They are subject to change without notice.

*) Dimensions and functions of shutter type CN-1914-000 are identical to those of CN-1914-001, but there is **no** aperture/speed ring. In the Repair Instructions only the shutter CN-1914-000 is described and illustrated.

Designation	Model No.	Synchronization
COMPUR 000-X with press-key diaphragm control	CN-1914-015	X contact



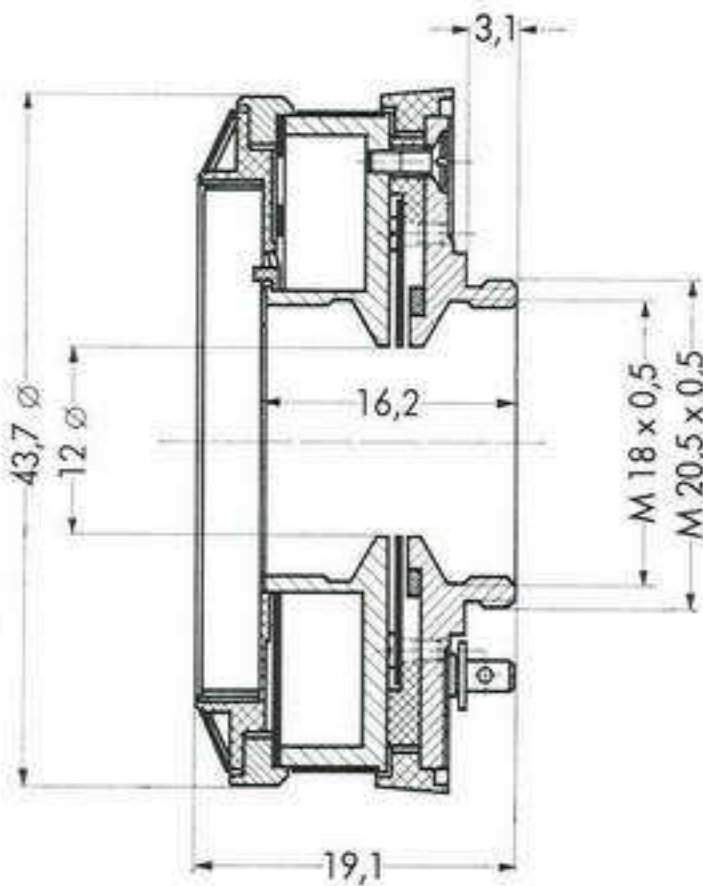
- Shutter speeds: B, 30, 60, 125, 250, 500
- Press-key diaphragm control (with manual override)
- Tensioning shaft, release lever
- Flash terminal at rear

Dimensions are in millimeters and for information only. They are subject to change without notice.

COMPUR-WERK MÜNCHEN

SPECIFICATIONS OF COMPUR SHUTTERS
Size 000

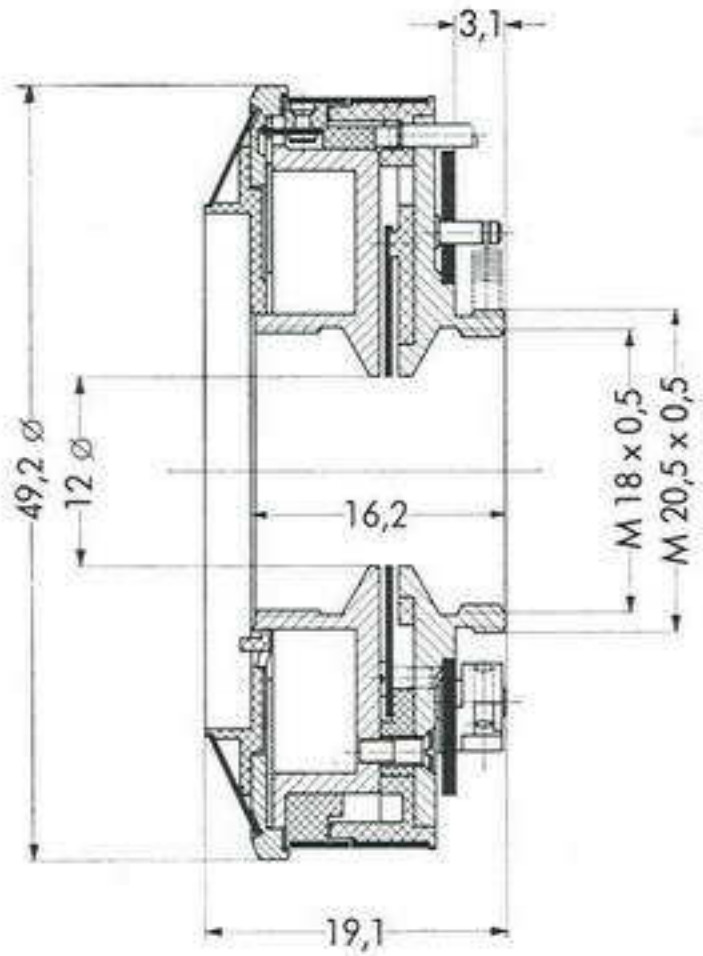
Designation	Model No.	Synchronization
COMPUR 000-X	CN-1915-001	X contact



- Shutter speeds: B, 30, 60, 125, 250
- Tensioning shaft, release lever
- Flash terminal at rear

Dimensions are in millimeters and for information only. They are subject to change without notice.

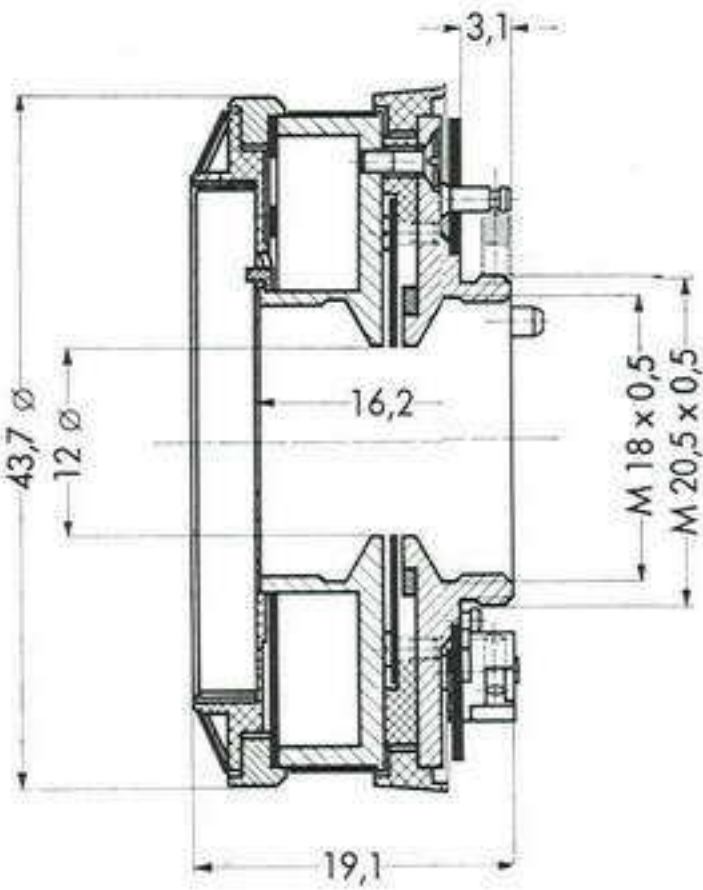
Designation	Model No.	Synchronization
COMPUR 000-X	CN-1916-001	X contact



- Everset shutter
- Shutter speeds: B, 30, 60, 125, 250
- Combined tensioning and release key
- Flash terminal at rear

Dimensions are in millimeters and for information only. They are subject to change without notice.

Designation	Model No.	Synchronization
COMPUR 000-X with taper differential and film speed setting	CN-1916-004	X contact



- Single-action shutter
- Shutter speeds: B, 30, 60, 125, 250
- Connection for coupled follow-up exposure meter (feeler pin)
- Film speed setting
- Flash terminal at rear

Dimensions are in millimeters and for information only. They are subject to change without notice.

Compur Shutter Repair Manual

Section 3

Tables of cameras / lens / shutter / mount

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Adox, Wiesbaden	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Adox 300	Cassar 2,8/45	CS-1110-621	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Adox 300	Cassar 2,8/45	CS-1112-653	CN-1112-010	CN-1112-010 CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Adox 300	Xenar 2,8/45	CS-1112-654	CN-1112-010	CN-1112-010 CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Adox 300	Xenar 2,8/45	CS-1110-656	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß

Table Camera/Lens/Shutter

Agfa-Gevaert
München

Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Optima-Parat	Color-Solinar 2,8/30	CS 1914—102	1914—000	1914—000 1914—102	27—29 5/S	1914—000
Isolette III	Solinar 3,5/75	CS 1110—126	1110—000	1110—000	1—4	1110—000
Super Isolette	Solinar 3,5/75	CS 1110—129	1110—000	1110—000	1—4	1110—000
Super Solinette	Solinar 3,5/50	CS 1110—130	1110—000	1110—000	1—4	1110—000
Ansco Super Regent	Solinar 3,5/50	CS 1110—132	1110—000	1110—000	1—4	1110—000
Silette	Apotar 3,5/45	CS 1112—134	1112—010	1112—010 1110—010 1110—010	4 1—4	1110—000
Super Silette	Apotar 3,5/45	CS 1110—135	1110—010	1110—010 1110—000	4 1—4	1110—000
Isolette IV	Apotar 4,5/85	CS 1110—137	1110—000	1110—000	1—4	1110—000
Super Silette	Solagon 2,0/50	CS 1110—138	1110—010	1110—010 1110—000	4 1—4	1110—000
Ambi Silette	Color-Solinar 2,8/50	CS 1110—139	1110—030	1110—030 1110—000	6 1—4	1110—010
Ansco Super Memar	Solinar 2,8/50	CS 1110—140	1110—010	1110—010 1110—000	4 1—4	1110—000
Silette L	Solinar 2,8/50	CS 1112—141	1112—010	1112—010 1110—010 1110—000	4 1—4	1110—000
Super Silette L	Color-Solinar 2,8/50	CS 1110—142	1110—010	1110—010 1110—000	4 1—4	1110—000
Silette	Solinar 2,8/50	CS 1112—143	1112—010	1112—010 1110—010 1110—000	4 1—4	1110—000
Optima	Color Apotar S 3,9/39	CS 1114—146	1114—001	Siehe gesonderte Mappe für Compur-Automat-Verschlüsse See separate "Compur-Automat" Folder		
Optima III Optima III S	Color Apotar 2,8/45	CS 1114—149	1114—005	Siehe gesonderte Mappe für Compur-Automat-Verschlüsse See separate "Compur-Automat" Folder		
Selecta - M	Color-Solinar-R 2,8/45	CS 1114—150	1114—005	Siehe gesonderte Mappe für Compur-Automat-Verschlüsse See separate "Compur-Automat" Folder		
Optima 500	Color Apotar 2,8/45	CS 1114—151	1114—001	Siehe gesonderte Mappe für Compur-Automat-Verschlüsse See seaprate "Compur-Automat" Folder		
Optima 500 S	Color-Solinar 2,8/45	CS 1114—151	1114—001	Siehe gesonderte Mappe für Compur-Automat-Verschlüsse See separate "Compur-Automat" Folder		

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschuß
Table Camera/Lens/Shutter

Braun, Nürnberg

Kamera-Modell Camera	Objektiv Lens	Spezial- verschuß Special Shutter	Norm- verschuß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Colorette Super II	Div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CN-1110-030	CN-1110-030	CN-1110-030 CN-1110-000	6 1-4	CN-1110-030 CN-1110-000
Colorette Super I	Cassar S 2,8/45	CS-1112-612	CN-1112-010	CN-1112-010 CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Paxette I L	Plastigon 2,8/50	CS-1110-657	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Paxette I L	Ennalyt 2,0/50	CS-1110-658	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Colorette Super I	Plastigon 2,8/50	CS-1112-659	CN-1112-010	CN-1112-000 CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Paxette Reflex I B	Cassarit 2,8/50	CS-1110-661	CN-1110-000	CN-1110-035 CN-1110-000	22-24 1-4	CN-1110-034/035 CN-1110-000
Paxette Reflex automatic	Div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1110-669	CN-1110-035	CN-1110-035 CN-1110-000	22-24 1-4	CN-1110-000 CN-1110-000
Paxette 28 LK	Xenar 2,8/38	CS-1916-601	CN-1916-004	CN-1916-001 CN-1915-001	35 34	CN-1916-001 CN-1915-001
Paxette 28 BC	Trinar 2,8/38	CS-1916-602	CN-1916-001	CN-1916-001 CN-1915-001	35 34	CN-1916-001 CN-1915-001

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Diax, Ulm	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Diax L — 1	Trinar 2,8/45	CS—1112—655	CN—1112—010	CN—1112—010 CN—1110—010 CN—1110—000	4 1—4	CN—1110—000
Diax Ia, Ib, IIa, IIb	Diverse Wechselobjektive Interchangeable Lenses	CS—1210—698	CN—1210—000	CN—1110—000	1—4	CN—1110—000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter						Diverse Firmen Various firms
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
—	diverse Objektive Interchangeable Lenses	CS—1210—601	CN—1210—051	CN—1210—051 CN—1110—000	26 1—4	CN—1110—000
COMPUR-WERK MÜNCHEN						

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Franka, Bayreuth	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Solida	Xenar 3,5/80	CS-1110-605	CN-1110-000	CN-1110-000	1-4	CN-1110-000
<div>COMPUR-WERK MÜNCHEN</div>						

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Iloca, Hamburg	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Rapid I L und II L	Cassarit 2,8/50	CS-1112-651	CN-1112-010	CN-1112-010 CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Iloca Rapid II L	Heligon 2,0/50	CS-1110-652	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Iloca Rapid III	Culminar 2,8/50	CS-1110-660	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Iloca Electric	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1110-662	CN-1110-034	CN-1110-034 CN-1110-000	20-21 1-4	CN-1110-034 CN-1110-000
Argus C 100	Cyntar II 2,8/52	CS-1110-665	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Argus C 100	Cyntagor II 2,0/48	CS-1110-666	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000
Iloca Automatic	Heligon 2,0/50	CS-1110-683	CN-1110-025	CN-1110-025 CN-1110-000	17-18 1-4	CN-1110-025 CN-1110-000
Iloca Automatic	Ysarex 2,8/50	CS-1110-684	CN-1110-025	CN-1110-025 CN-1110-000	17-18 1-4	CN-1110-025 CN-1110-000
Iloca Rapid I	Cassarit 2,8/50	CS-1112-691	CN-1112-010	CN-1112-010 CN-1110-010 CN-1110-000	4 1-4	CN-1110-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschuß

Table Camera/Lens/Shutter

Kodak,
Stuttgart

Kamera-Modell Camera	Objektiv Lens	Spezial- verschuß Special Shutter	Norm- verschuß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Instamatic 500	Xenar 2,8/38	CS-1914-301	CN-1914-000	CN-1914-000	27-29 6/S	CN-1914-000
Instamatic 250	Reomar 2,8/38	CS-1916-302	CN-1916-001	CN-1916-001 CN-1915-001	35 34	CN-1916-001 CN-1915-001
Retina I b	Xenar 2,8/50	CS-1110-337	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Retina III c	Xenon C 2,0/50	CS-1110-338	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Retina II c	Xenon C 2,8/50	CS-1110-340	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Retinette	Reomar 3,5/45	CS-1112-341 ohne Licht- werteinstellung without Light Value Setting	CN-1112-010	CN-1112-010 CN-1110-030 CN-1110-010 CN-1110-000	4 1-4	CN-1110-020 CN-1110-000
Retinette I	Reomar 3,5/45	CS-1112-341 mit Licht- werteinstellung with Light Value Setting	CN-1112-010	CN-1112-010 CN-1110-030 CN-1110-010 CN-1110-000	4 1-4	CN-1110-020 CN-1110-000
Retina II c	Heligon C 2,8/50	CS-1110-342	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Retina III c	Heligon C 2,0/50	CS-1110-343	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Retina Reflex	Xenon C 2,0/50	CS-1110-346	CN-1110-020	CN-1110-020 CN-1110-000	5 1-4	CN-1110-020 CN-1110-000
Retina Reflex	Heligon C 2,0/50	CS-1110-347	CN-1110-020	CN-1110-020 CN-1110-000	5 1-4	CN-1110-020 CN-1110-000
Retinette II	Reomar 2,8/45	CS-1112-355	CN-1112-010	CN-1112-010 CN-1110-030 CN-1110-018 CN-1110-010 CN-1110-000	4 1-4	CN-1110-020 CN-1110-000
Retina II S	Xenar 2,8/45	CS-1110-356	CN-1110-026	CN-1110-026 CN-1110-025 CN-1110-018 CN-1110-010 CN-1110-000	18-19 4 1-4	CN-1110-025/026 CN-1110-000
Retina III S	div. Objektive in Compur- Wechsel Fassungen Interchangeable Lenses in Compur Quick-Change Mounts	CS-1110-358	CN-1110-034	CN-1110-034 CN-1110-030 CN-1110-010 CN-1110-000	20-21 4 1-4	CN-1110-034/035 CN-1110-000
Retina Reflex III Retina Reflex S	div. Objektive in Compur- Wechsel Fassungen Interchangeable Lenses in Compur Quick-Change Mounts	CS-1110-359	CN-1110-035	CN-1110-035 CN-1110-034 CN-1110-030 CN-1110-016 CN-1110-000	22-24 1-4	CN-1110-034/035 CN-1110-000
Retina Reflex IV	div. Objektive in Compur- Wechsel Fassungen Interchangeable Lenses in Compur Quick-Change Mounts	CS-1112-359	CN-1110-035	CN-1110-035 CN-1110-034 CN-1110-030 CN-1110-016 CN-1110-000	22-24 1-4	CN-1110-035 CN-1110-034 CN-1110-000
Retina Automatik II und III	Xenar 2,8/45	CS-1114-372	CN-1114-005	Siehe gesonderte Mappe für Compur-Automat-Verschlüsse See separate "Compur-Automat" Folder		
Retina I BS und II F	Xenar 2,8/45	CS-1112-375	CN-1112-004	CN-1112-004 CN-1112-010 CN-1110-020 CN-1110-000	25 5 1-4	CN-1112-004 CN-1110-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Linhof, München	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm. verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Technika 70 und Super Technika 9 x 12	Super Angulon 8/65 Angulon 6,8/65 Technikon 5,6/58	CS-1110-645	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Technika 70	Xenar 3,5/100 Press Xenar 4,7/127 Symmar 5,6/100 Symmar 5,6/135 Tele Arton 5,5/180 Super Angulon 4/53 Super Angulon 5,6/90 Super Angulon 8/75 Super Angulon 8/90 Xenotar 4/100 Tessar 3,5/100 Telomar 5,5/180 Biogon 4,5/45 Tele Technikon 4,5/180 Apo-Lanthar 4,5/100 Apo-Ronar 9/150	CS-1210-602	CN-1210-051	CN-1210-051 CN-1110-000	26 1-4	CN-1110-000
Super Technika 9x12	Press Xenar 4,7/127 Symmar 5,6/135 Super Angulon 4/53 Super Angulon 5,6/90 Super Angulon 8/75 Super Angulon 8/90 Repro-Claron 9/210					
Super Technika 13x18	Super Angulon 8/90					
Linhof 220	Technikar 3,5/95	CS-1210-604	CN-1110-000	CS-1210-604 CN-1210-000 CN-1110-000	4 1-4	CS-1210-604 CN-1110-010
Technika 70	Sonnar 4,8/180	CS-1210-661 (früher auch in CS-1307-618 eingebaut) (formerly also installed in CS-1307-618)	CN-1210-051	CS-1210-660 CN-1210-051 CN-1110-000	4/S 26 1-4	CN-1110-000
Technika 70 Super Technika 9 x 12 Super Technika 13 x 18	Biogon 4,5/75	CS-1210-662	CN-1210-051	CS-1210-660 CN-1210-051 CN-1110-000	4/S 26 1-4	CN-1110-000
Super Technika 9 x 12 Super Technika 13 x 18 Kardan 18 x 24	Super Angulon 8/121	CS-1210-663	CS-1210-051	CS-1210-660 CN-1210-051 CN-1110-000	4/S 26 1-4	CN-1110-000
Technika 70 Super Technika 9 x 12	Biogon 4,5/53	CS-1210-667	CN-1210-051	CS-1210-660 CN-1210-051 CN-1110-000	4/S 26 1-4	CN-1110-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Rollei-Werke Franke & Heidecke Braunschweig	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Rolleiflex 3,5 E3 2380000 - 2385034	Planar 3,5/75	CS-1110-226 mit „M“-Synch. with „M“-Synch. (ohne/without „M“ siehe/see CS-1112-242)	CN-1110-000	CN-1110-000 CN-1110-010	1-4 4	CN-1110-000
Rolleiflex T 2100000 - 2198999	Tessar 3,5/75					
Rolleiflex 3,5 F 2250000 -	Planar 3,5/75					
Rolleiflex 3,5 1282000 - 1298999 1401000 - 1427999	Xenar 3,5/75 Tessar 3,5/75	CS-1110-230a	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Rolleiflex 3,5 1740000 - 1787999 Rolleiflex 3,5 E2 1870000 - 1871999 2480000 - 2481999	Planar 3,5/75	CS-1110-230b				
Rolleicord V 1500000 - 1583999 Rolleicord Va 1584000 - 1599999 1900000 - 1943999 Rolleicord Vb 2600000 - 2646999	Xenar 3,5/75	CS-1110-231a mit „M“-Synch. with „M“-Synch.	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Rolleicord Vb	Xenar 3,5/75	CS-1112-231b ohne „M“-Synch. without „M“-Synch.	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Rolleiflex 4x4	Xenar 3,5/60	CS-1110-235	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-020 CN-1110-000
Rolleiflex 3,5 1850000 - 1868999 Rolleiflex 3,5 E2 1870000 - 1871999 2480000 - 2481999	Xenotar 3,5/75	CS-1110-236	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Rolleiflex 3,5 F 2200000 - 2219999 2230000 - 2241500	Xenotar 3,5/75	CS-1110-238	CN-1110-025	CN-1110-025 CN-1110-019 CN-1110-000	17-18 17-18 1-4	CN-1110-025 CN-1110-019 CN-1110-000
Rolleiflex 3,5 F 2200000 - 2219999 2230000 - 2241500	Planar 3,5/75	CS-1110-239	CN-1110-025	CN-1110-025 CN-1110-000	17-18 1-4	CN-1110-025 CN-1110-000
Rolleiflex 3,5 E3 2380000 - 2385034 Rolleiflex 3,5 F 2250000 - 2290000	Xenotar 3,5/75	CS-1110-240	CN-1110-010	CN-1110-010 CN-1110-000	4 1-4	CN-1110-000

COMPUR-WERK MÜNCHEN

Kamera-Modell Camera	Objektiv Lens	Spezial- verschuß Special Shutter	Norm- verschuß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Rolleiflex T 2199000 -	Tessar 3,5/75	CS-1112-242a ohne „M“-Synch. without “M“-Synch. (mit/with „M“ siehe/see CS-1110-226)	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Rolleiflex 2,8 E 1621000 - 1665999	Planar 2,8/80 Xenotar 2,8/80	CS-1210-275	CN-1210-000	CN-1210-000 CS-1210-671	1-4	CN-1110-000
Rolleiflex 2,8 E2 2350000 - 2357999	Xenotar 2,8/80 Planar 2,8/80					
Tele-Rolleiflex 2300000 - 2304499	Sonnar 0,4/135					
Weitwinkel-Rolleiflex W 2490000 -	Distagon 4/55					
Rolleiflex 2,8 F 2400000 -	Planar 2,8/80 Xenotar 2,8/80	CS-1210-276	CN-1210-000	CN-1110-000 CS-1210-671	1-4	CN-1110-000
Rolleiflex 2,8 E3 2360000 - 2362024	Planar 2,8/80 Xenotar 2,8/80					
Rollei 35	Tessar 3,5/40	CS-1913-205	—	Ersatzteilunterlagen bei Fa. Rollei-Werke anfordern For documentation on spare parts, please write to Rollei-Werke		
Rollei SL 26	Vorderglied- Wechsel-Objektive Lenses with inter- changeable front components	CS-1912-205	—	CS-1912-205	9-10/S	CS-1912-205

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					S E M (Preciorec) Frankreich	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
SEMFLEX Studio	5,4/150	CS-1110-630	CN-1110-000	CN-1110-000	1-4	CN-1110-000
SEMFLEX Otomatic	3,5/75					

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Schneider Bad Kreuznach	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep.Instr. Page	Schmierplan Lubrication Schedule
—	Angulon 6,8/65 Symmar 5,6/105 Xenar 3,5/50 Xenon 2/50	CN—1110—002	CN—1110—000	CN—1110—000	1—4	CN—1110—000
—	Super Angulon 8/47	CS—1110—615	CN—1110—000	CN—1110—000	1—4	CN—1110—000
—	Super Angulon 8/65	CS—1110—616	CN—1110—000	CN—1110—000	1—4	CN—1110—000
—	Super Angulon 8/90	CS—1110—617	CN—1110—000	CN—1110—000	1—4	CN—1110—000
—	Angulon 6,8/90 Super Angulon 4/53 Super Angulon 5,6/90 Super Angulon 8/75 Super Angulon 8/90 Xenar 3,5/100 Xenar 3,5/105 Xenar 4,5/105 Xenar 4,7/127 Xenar 4,7/135 Xenotar 2,8/80 Xenotar 4/100 Symmar 5,6/100 Symmar 5,6/135 Tele Arton 5,5/180 Repro Claron 9/210	CN—1210—051	CN—1210—051	CN—1210—051 CN—1110—000	26 1—4	CN—1110—000
—	Super Angulon 8/121	CS—1210—660	CN—1210—051	CS—1210—660 CN—1210—051 CN—1110—000	4/S 26 1—4	CN—1110—000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera / Objektiv / Verschuß Table Camera / Lens / Shutter					Sinar, Schaffhausen Schweiz	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschuß Special Shutter	Norm- verschuß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Sinar Fachkamera	div. Objektive Interchangeable Lenses	CS-1210-603	CN-1210-051	CN-1210-051 CN-1110-000	26 1-4	CN-1110-000
Sinar Fachkamera	Super-Angulon 8/121	CS-1210-666	CN-1210-051	CS-1210-660 CN-1210-051 CN-1110-000	4/S 26 1-4	CN-1110-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera / Objektiv / Verschuß Table Camera / Lens / Shutter					Voigtländer, Braunschweig	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschuß Special Shutter	Norm- verschuß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Vitessa T	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CN-1110-030	CN-1110-030	CN-1110-030 CN-1110-000	6 1-4	CN-1110-030 CN-1110-000
—	diverse Objektive Interchangeable Lenses	CN-1210-051	CN-1210-051	CN-1210-051 CN-1110-000	26 1-4	CN-1110-000
Vitessa	Ultron 2,0/50	CS-1110-439	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Vitessa	Color Skopar 2,8/50	CS-1110-440	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Vitessa	Color Skopar 3,5/50	CS-1110-441	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Bessamatic	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1110-444	CN-1110-035	CN-1110-035 CN-1110-000	22-24	CN-1110-035 CN-1110-000
Bessamatic	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1112-444 Synchro- Compur X	CN-1110-035	CN-1110-035 CN-1110-000	22-24 1-4	CN-1110-035 CN-1110-000
Ultramatic	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1110-452	CN-1110-035	CN-1110-035 CN-1110-000	22-24	CN-1110-035
Ultramatic	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1112-452	CN-1110-035	CN-1110-035 CN-1110-000	22-24 1-4	CN-1110-035 CN-1110-000
Bessamatic m	div. Objektive in Compur- Wechselfassung Interchangeable Lenses in Compur Quick-Change Mount	CS-1112-455	CN-1110-035	CS-1112-455 CN-1110-035 CN-1110-000	7/S-8/S 22-24 1-4	CN-1110-035 CN-1110-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					C. Zeiss Oberkochen	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
—	Topogon 11/60	CS-1307-605	CN-1307-000	CN-1307-000	30-33	CN-1307-000

COMPUR-WERK MÜNCHEN

Übersichtstabelle Kamera/Objektiv/Verschluß Table Camera/Lens/Shutter					Zeiss-Ikon, Stuttgart	
Kamera-Modell Camera	Objektiv Lens	Spezial- verschluß Special Shutter	Norm- verschluß Standard Shutter	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Contaflex I und II	Tessar 2,8/45	CS-1110-543	CN-1110-000	CN-1110-000 CN-1110-020	1-4	CN-1110-000
Super Ikonta III/IV	Novar/Tessar 3,5/75	CS-1110-544	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Contaflex IV	Vorderglied- Wechselobjektive Lenses with interchangeable front components	CS-1110-545	CN-1110-020	CN-1110-020 CN-1110-000	5	CN-1110-020 CN-1110-000
Ikonta IIa	Tessar 3,5/75	CS-1110-548	CN-1110-000	CN-1110-000	1-4	CN-1110-000
Contaflex super	Vorderglied- Wechselobjektive Lenses with interchangeable front components	CS-1110-549	CN-1110-024	CN-1110-024 CN-1110-020 CN-1110-000	13-16 5 1-4	CN-1110-024 CN-1110-020 CN-1110-000
Contaflex super B	Vorderglied- Wechselobjektive Lenses with interchangeable front components	CS-1110-556	CN-1110-000	CS-1110-556 CN-1110-024 CN-1110-000	1/S-2/S 13-16 1-4	CS-1110-556 CN-1110-024 CN-1110-000
Contaflex super B u. BC	Vorderglied- Wechselobjektive Lenses with interchangeable front components	CS-1112-556	CN-1110-000	CS-1110-556 CN-1110-024 CN-1110-000	1/S-2/S 13-16 1-4	CS-1110-556 CN-1110-024 CN-1110-000
Contaflex super	Vorderglied- Wechselobjektive Lenses with interchangeable front components	CS-1112-558 Synchro- Compur X	CN-1110-024	CN-1110-024 CN-1110-000	13-16 1-4	CN-1110-024 CN-1110-000

COMPUR-WERK MÜNCHEN

Compur Shutter Repair Manual

Section 4

Illustrations for standard shutters

SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 1

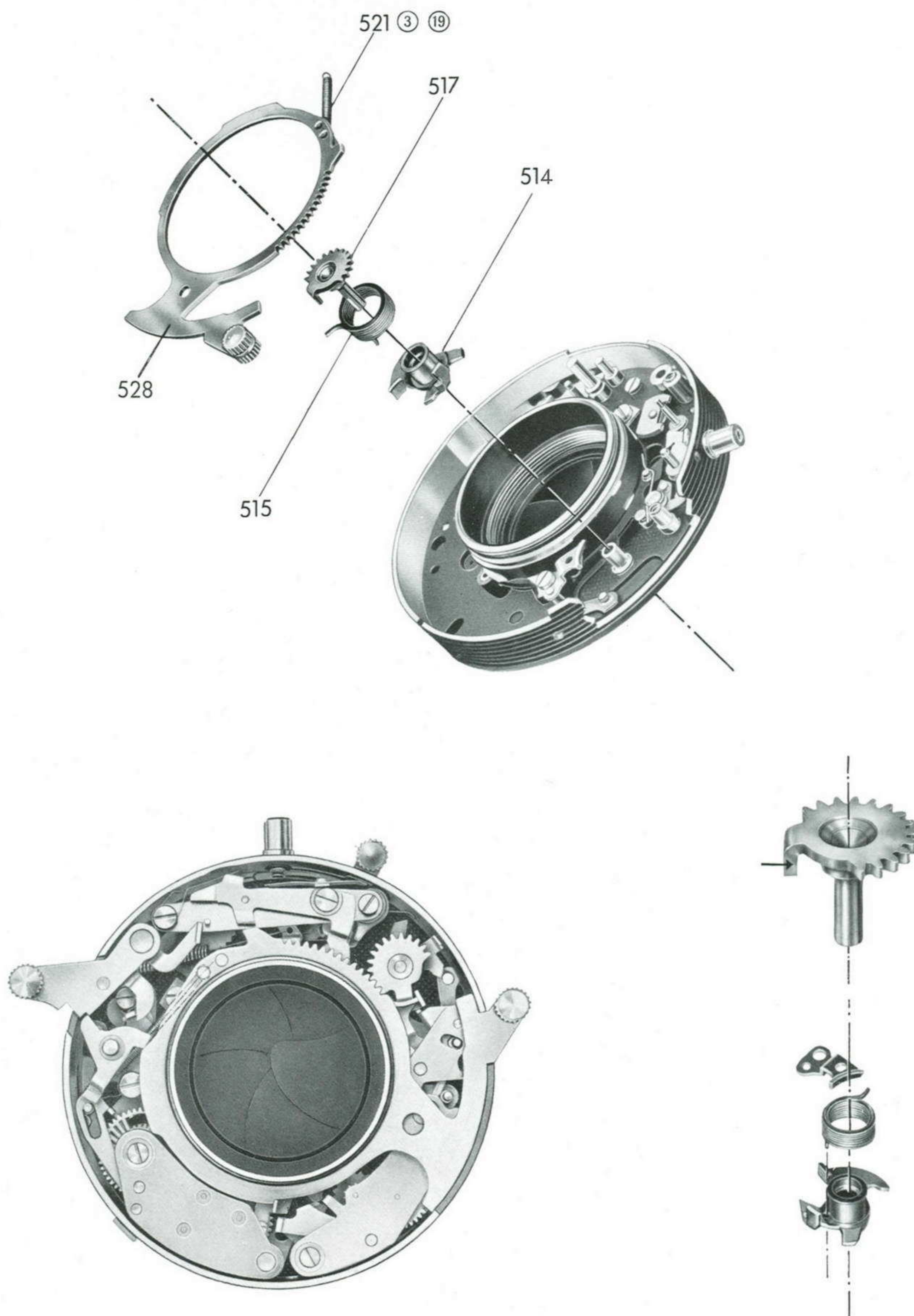


SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 2

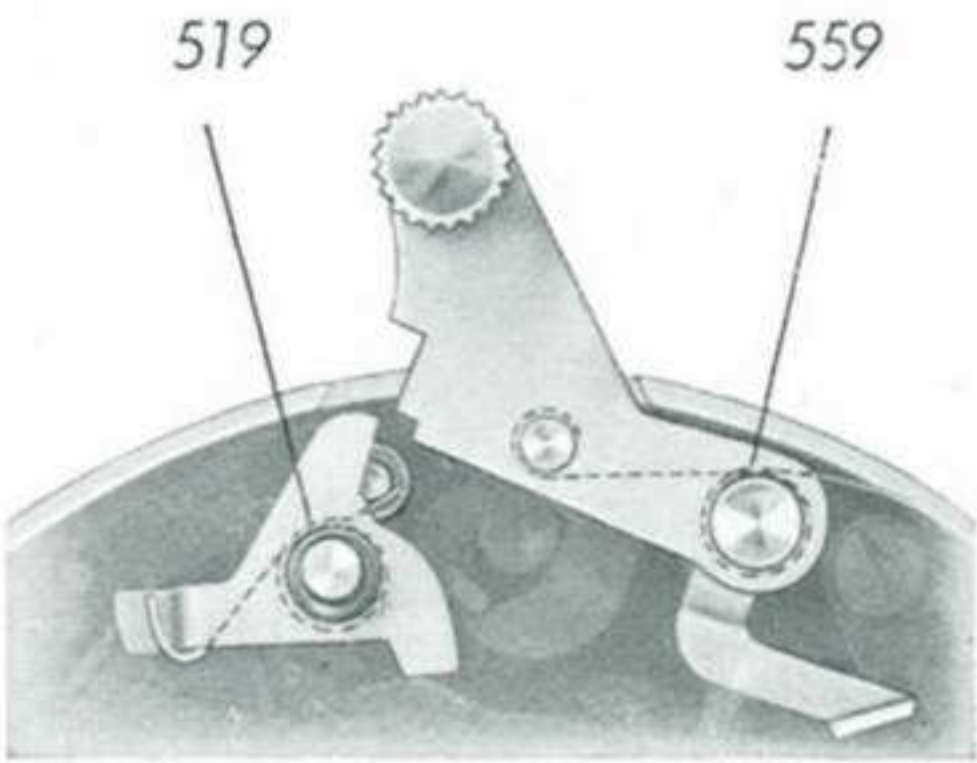
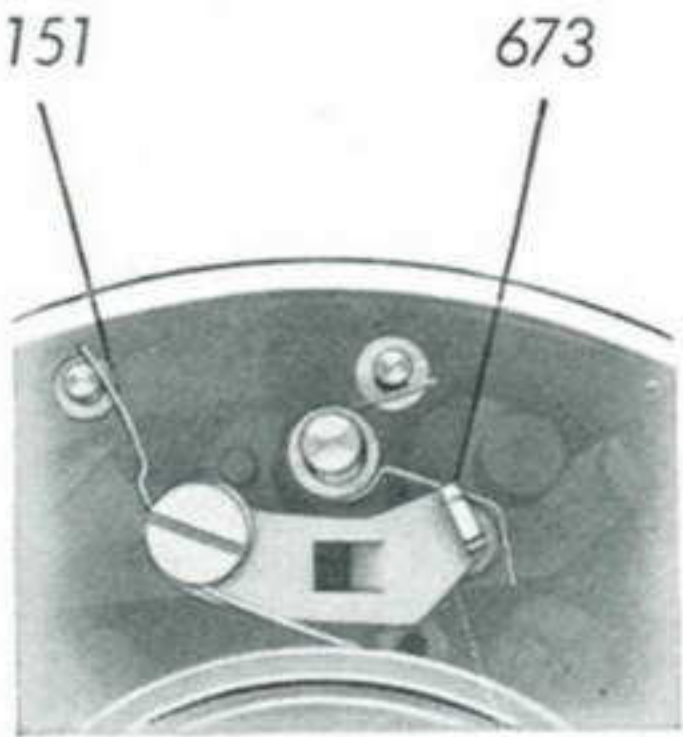
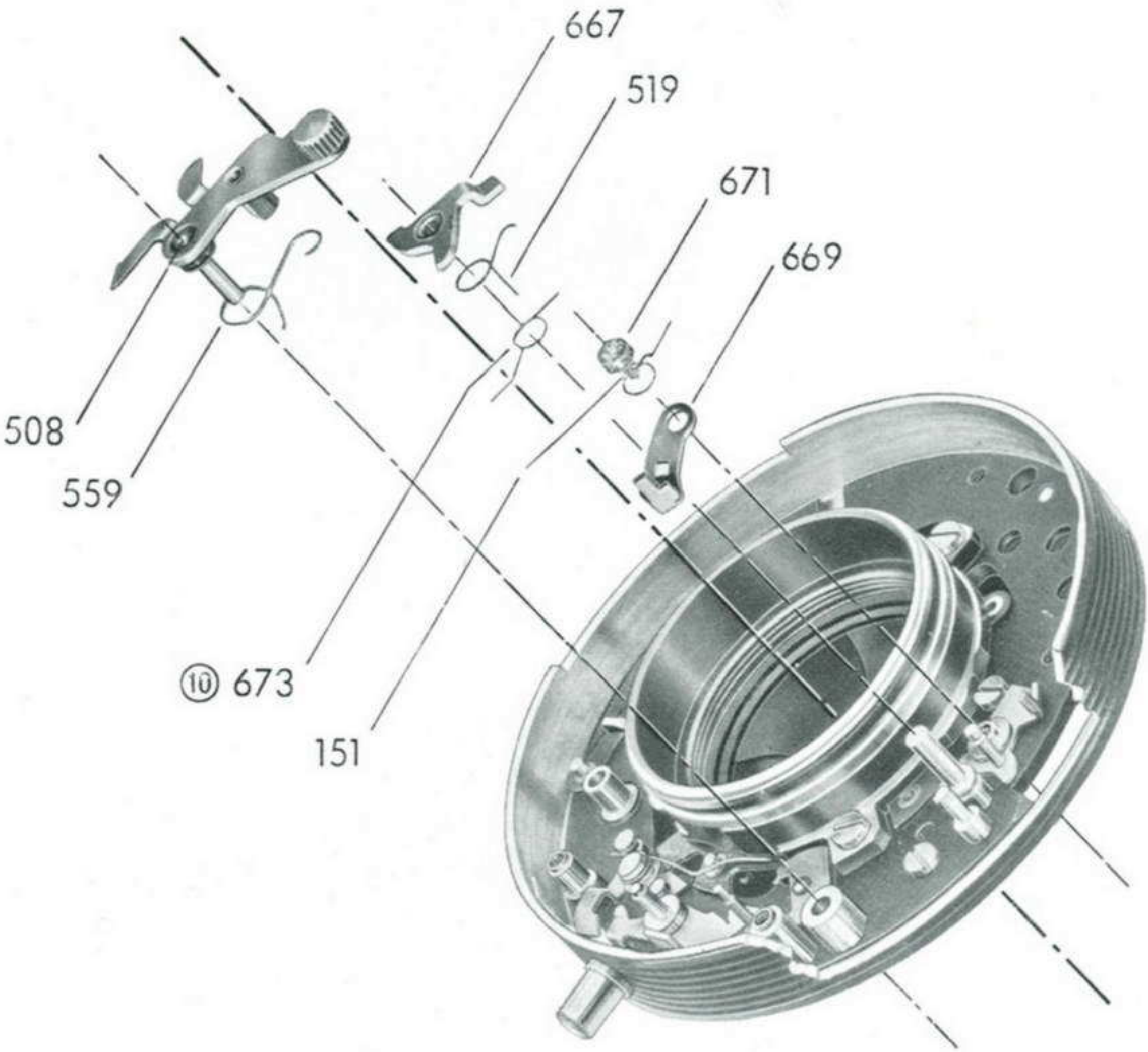


SYNCHRO-COMPUR 00-MXV

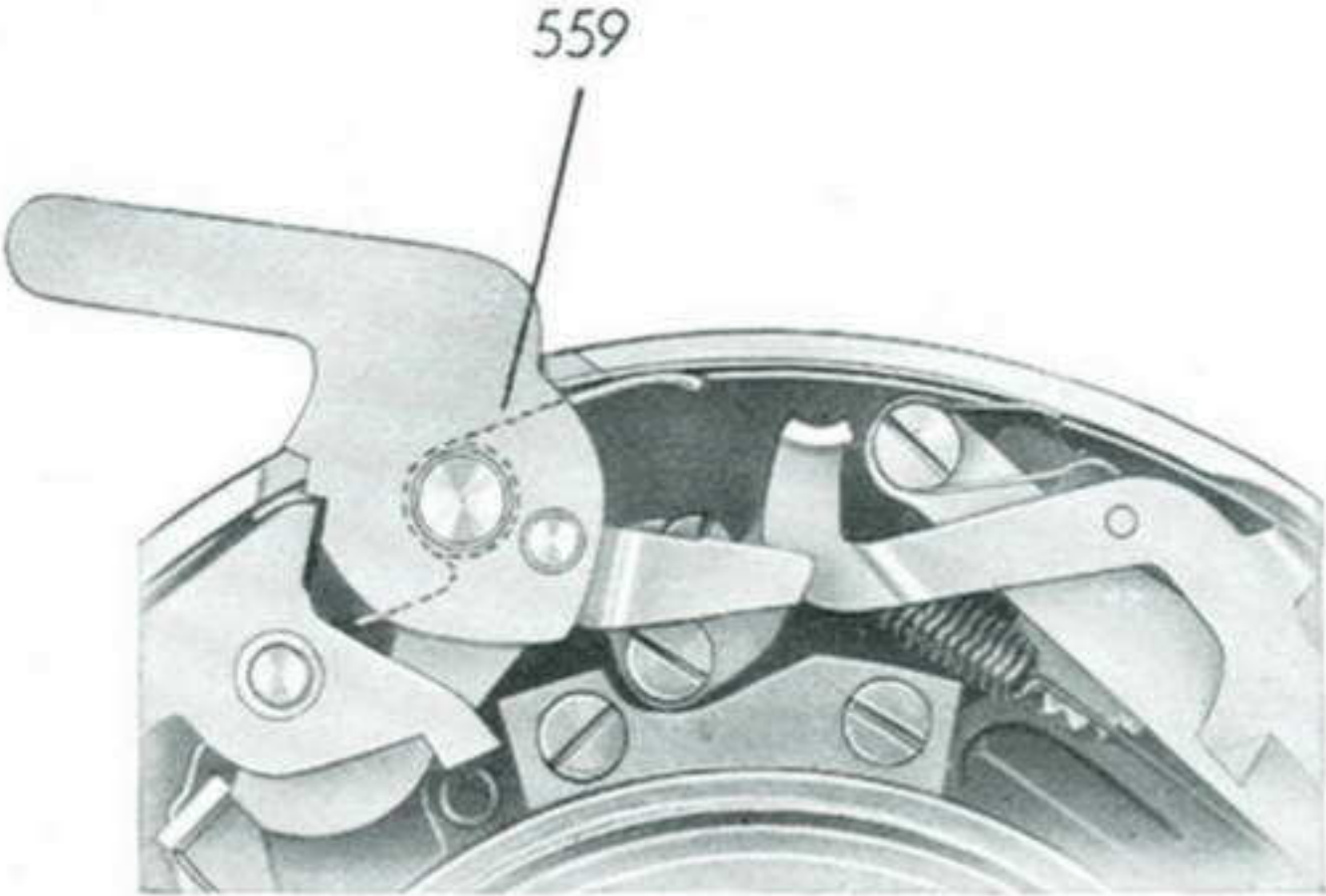
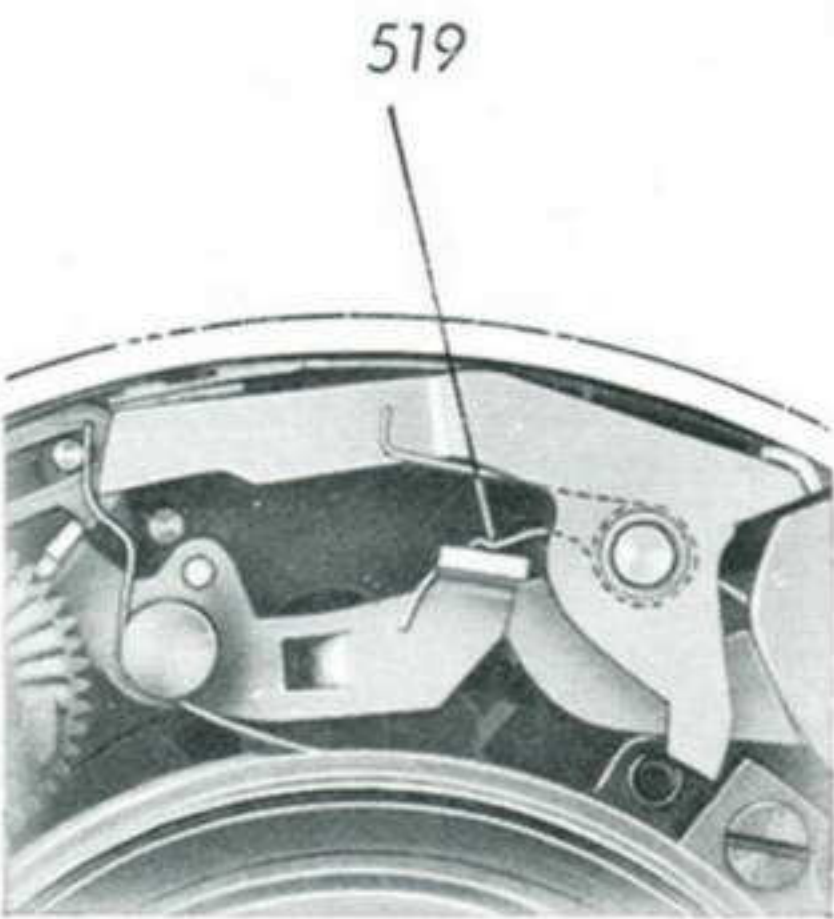
Spannring
Tensioning ring

CN-1110-000

Tafel 3



CN-1110-000

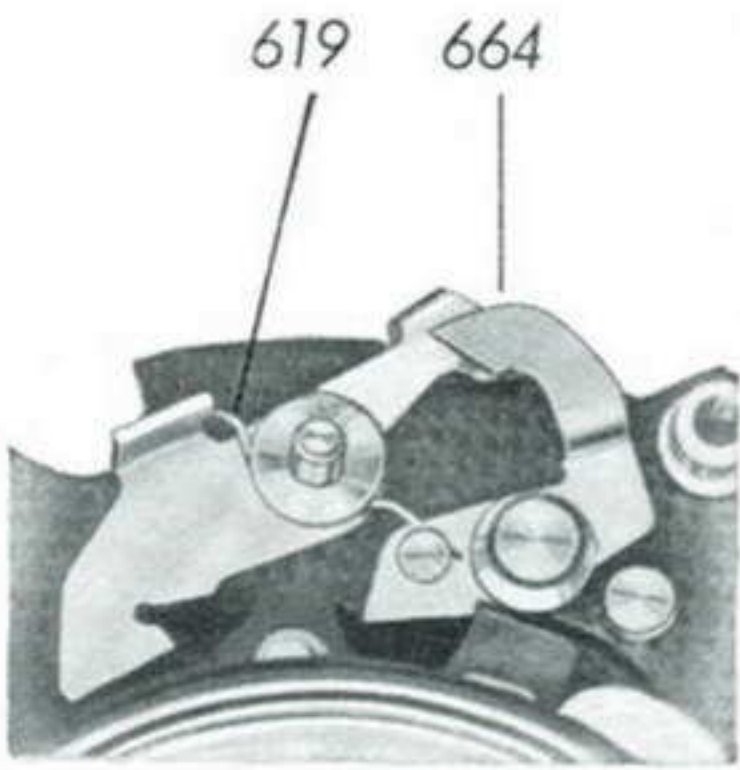
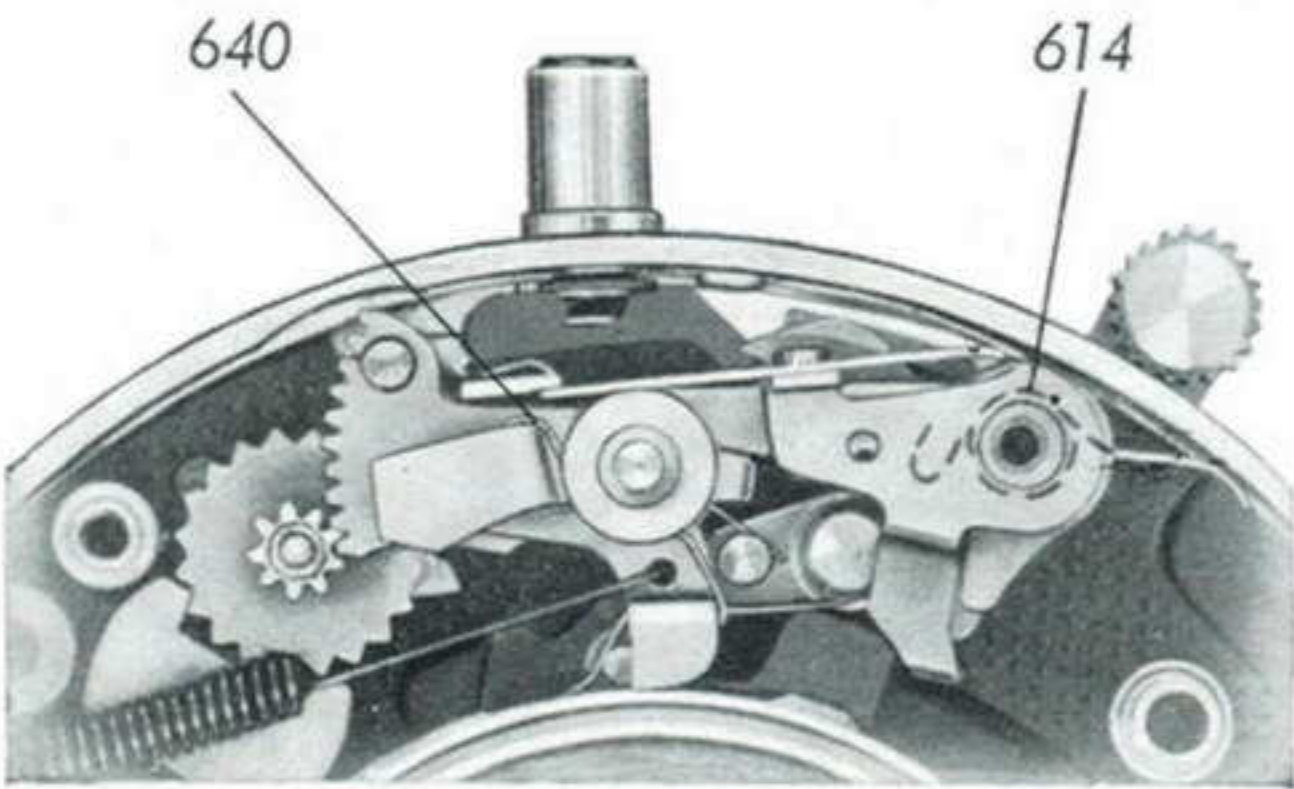
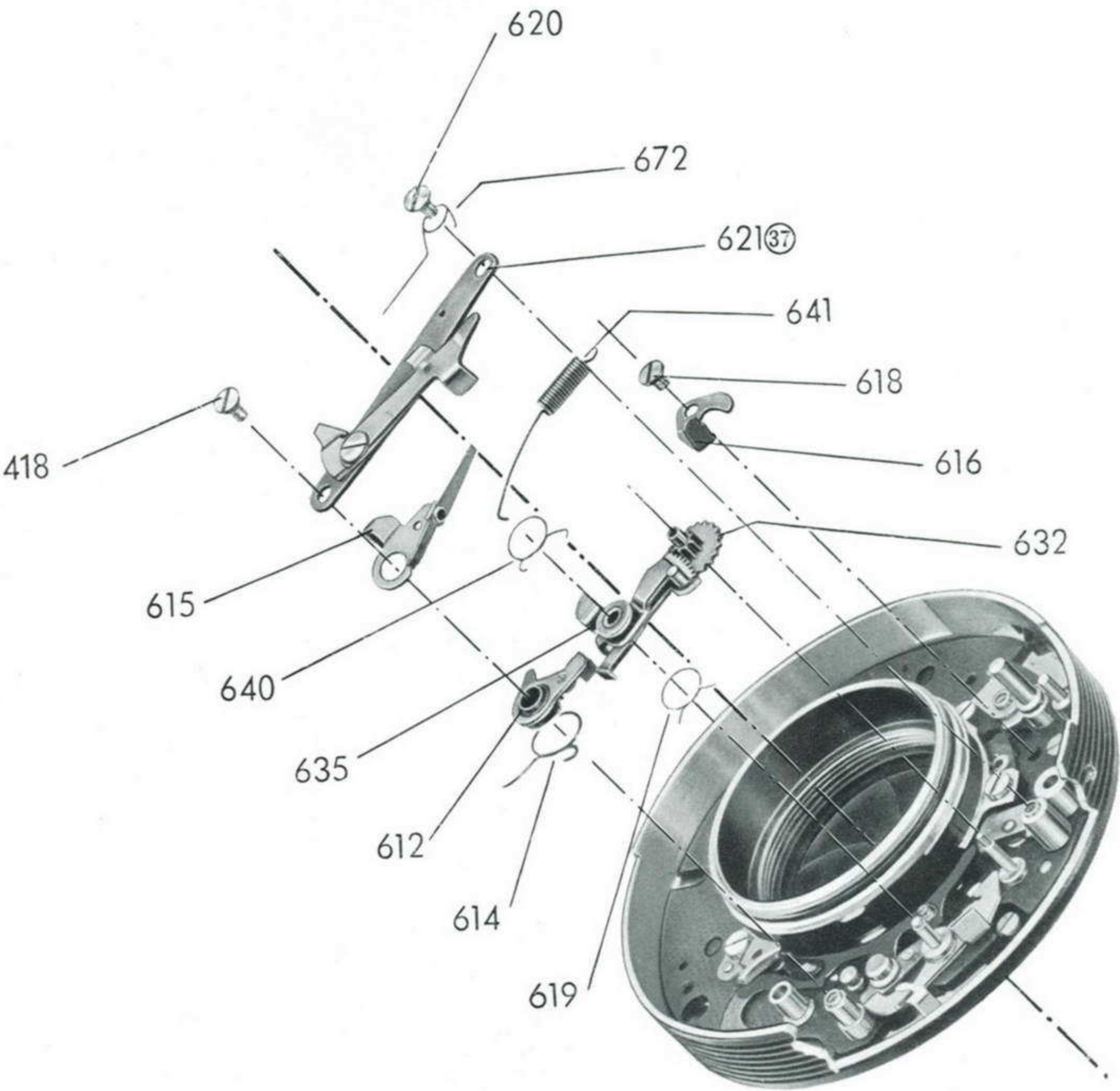


SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 4

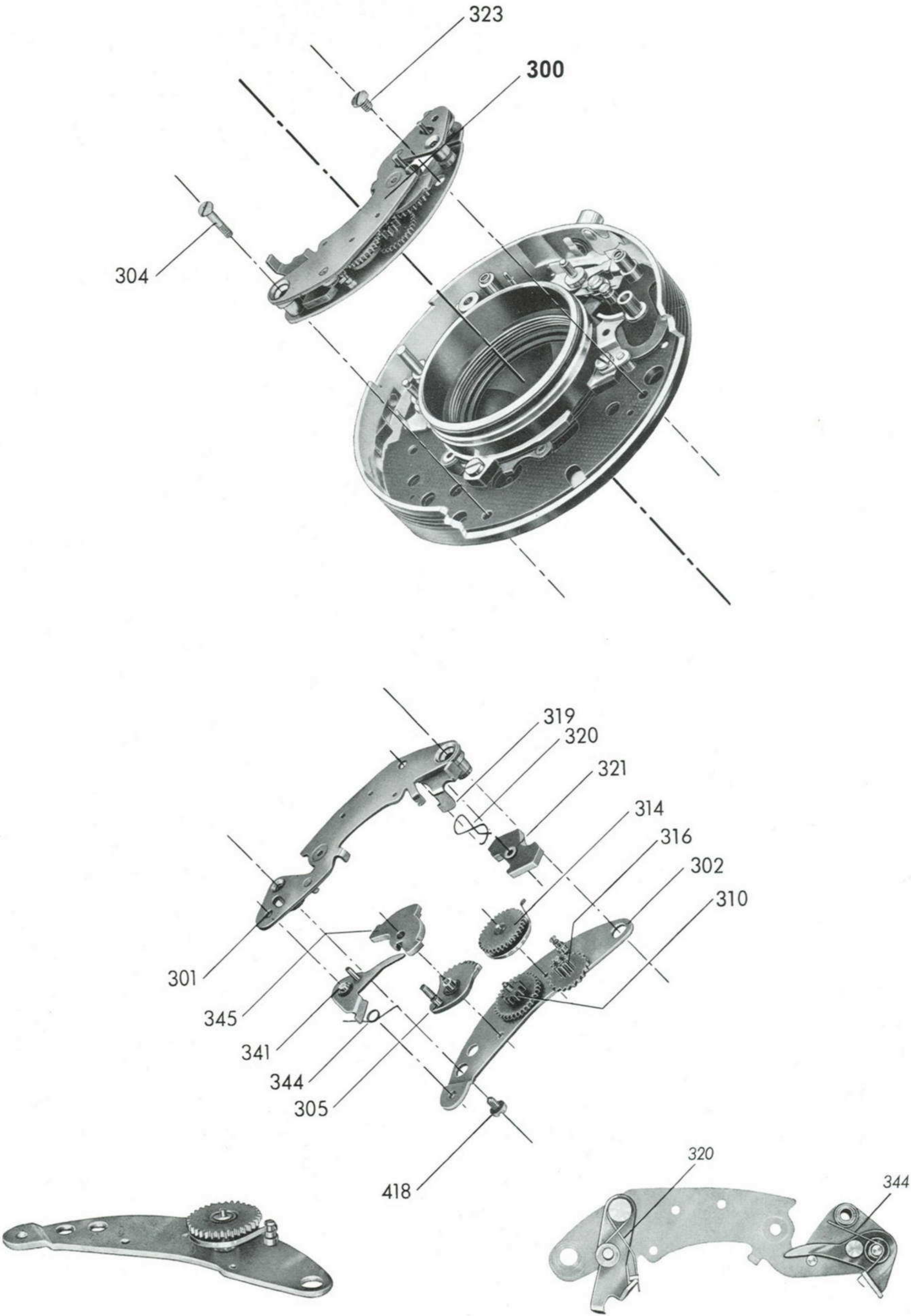


SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 5

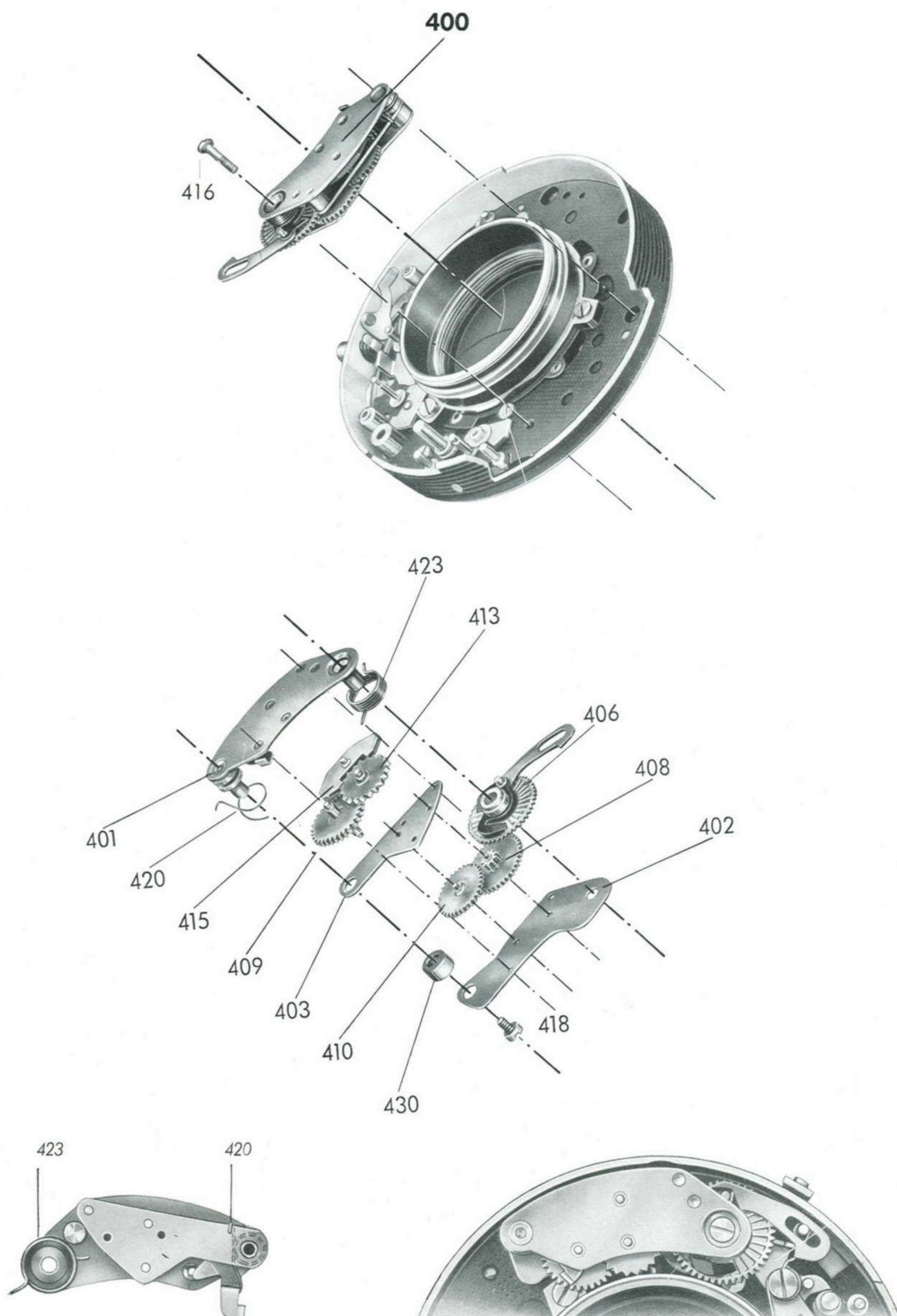


SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 6



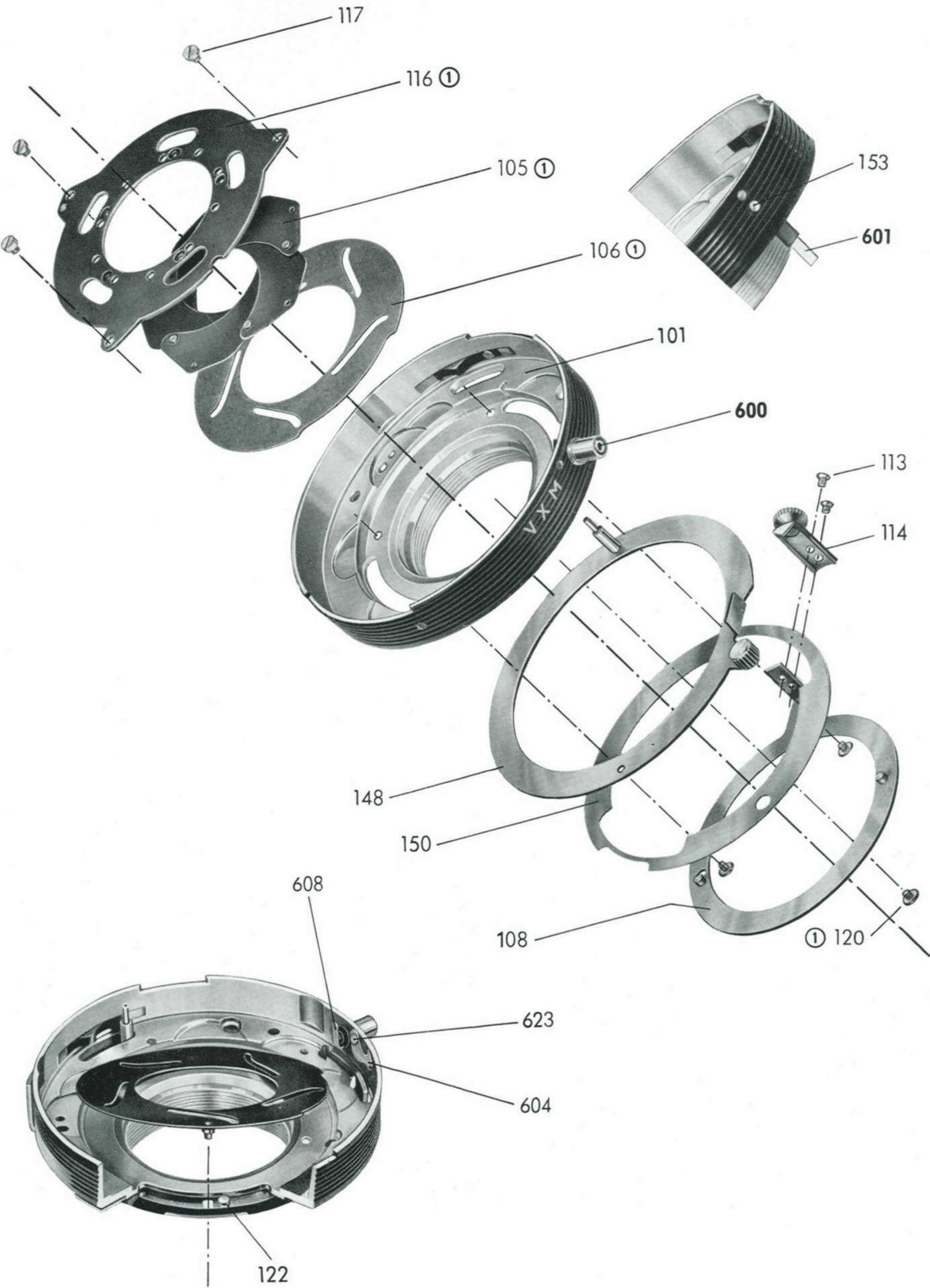
COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 8



COMPUR-WERK MUNICH

SYNCHRO-COMPUR 00-MXV

Spannring
Tensioning ring

CN-1110-000

Tafel 9

Fig. 1

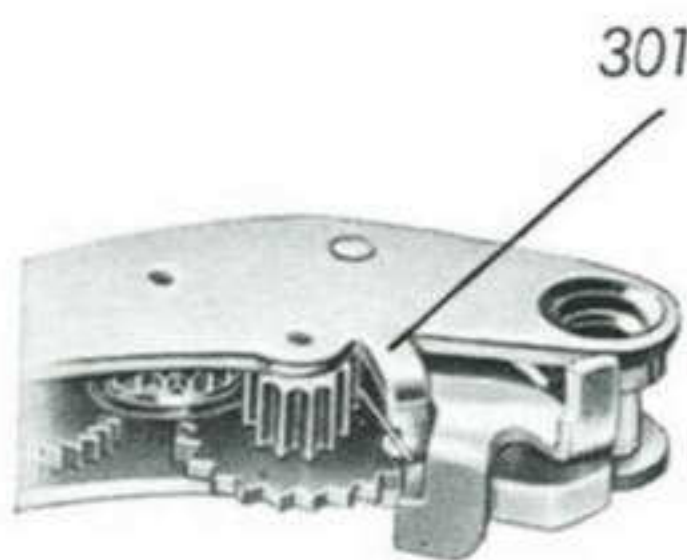


Fig. 2

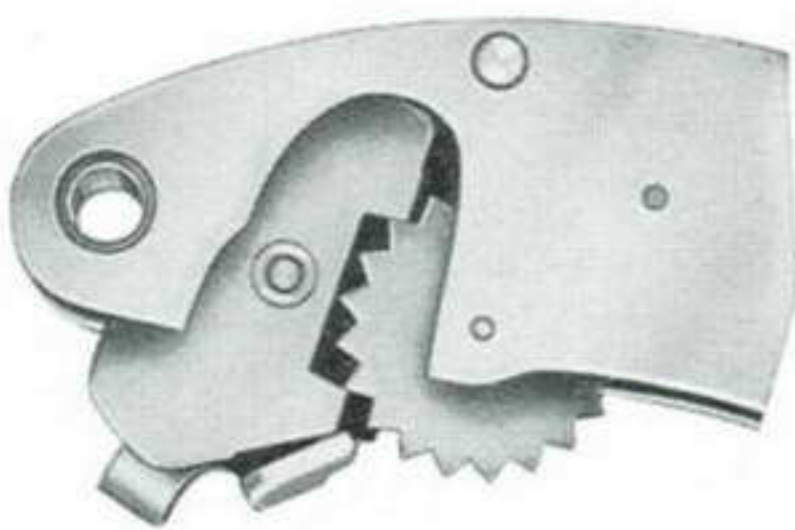


Fig. 3

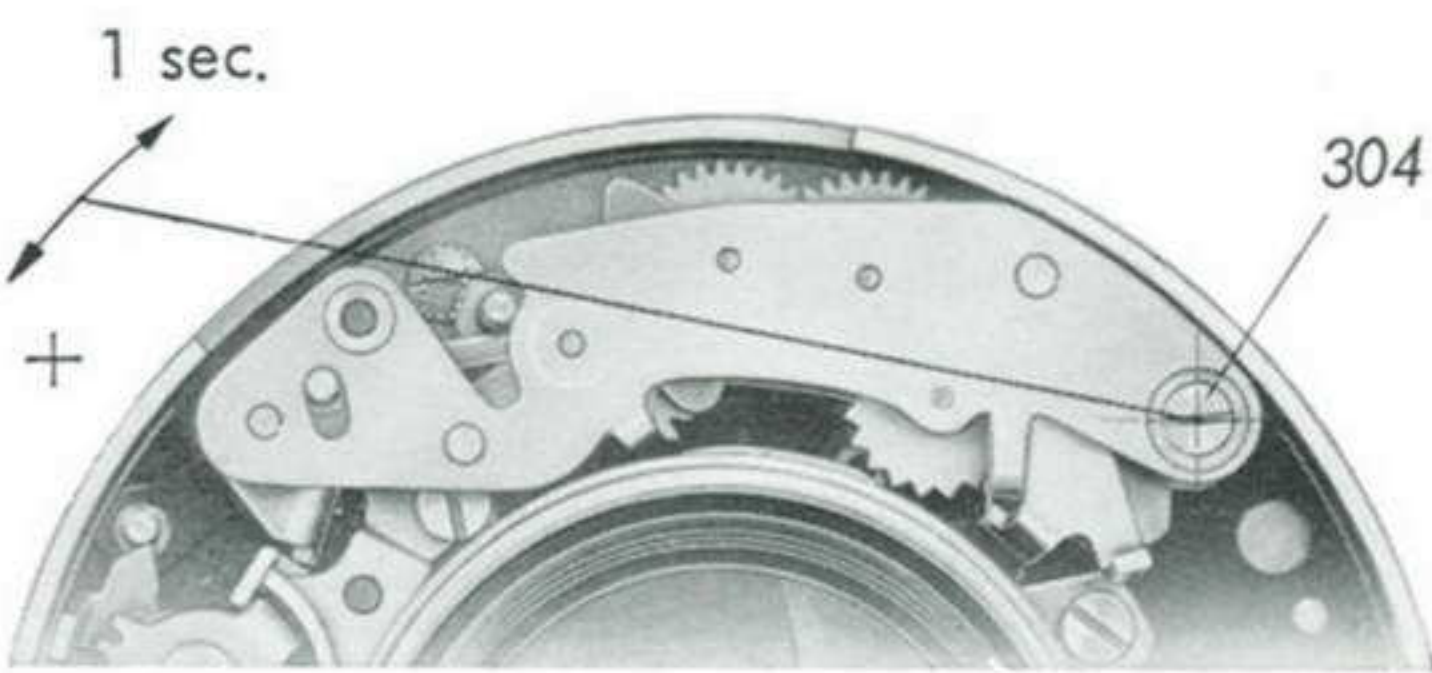


Fig. 4

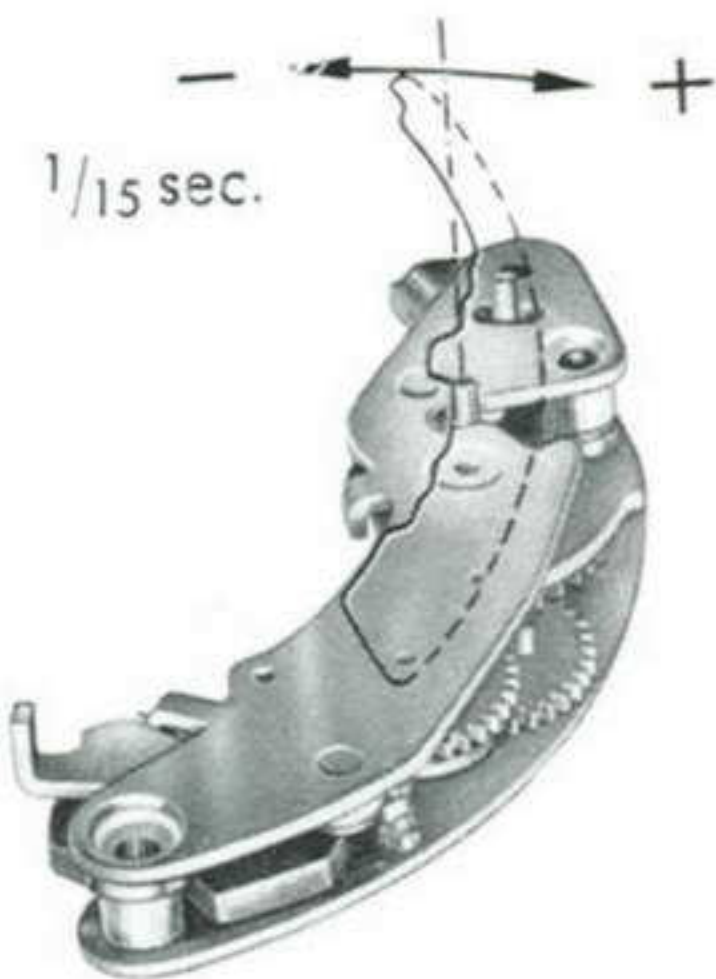


Fig. 5

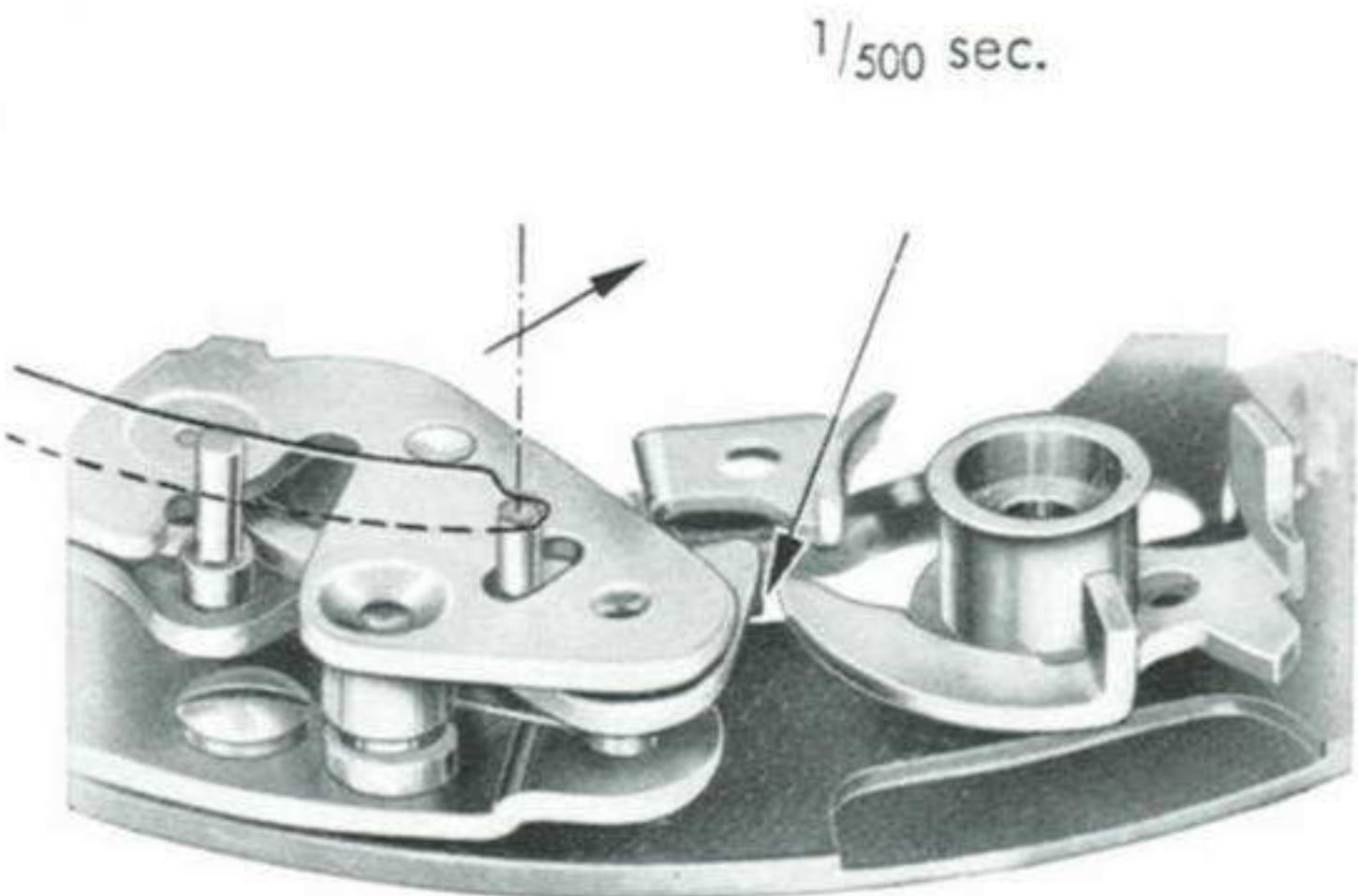


Fig. 6

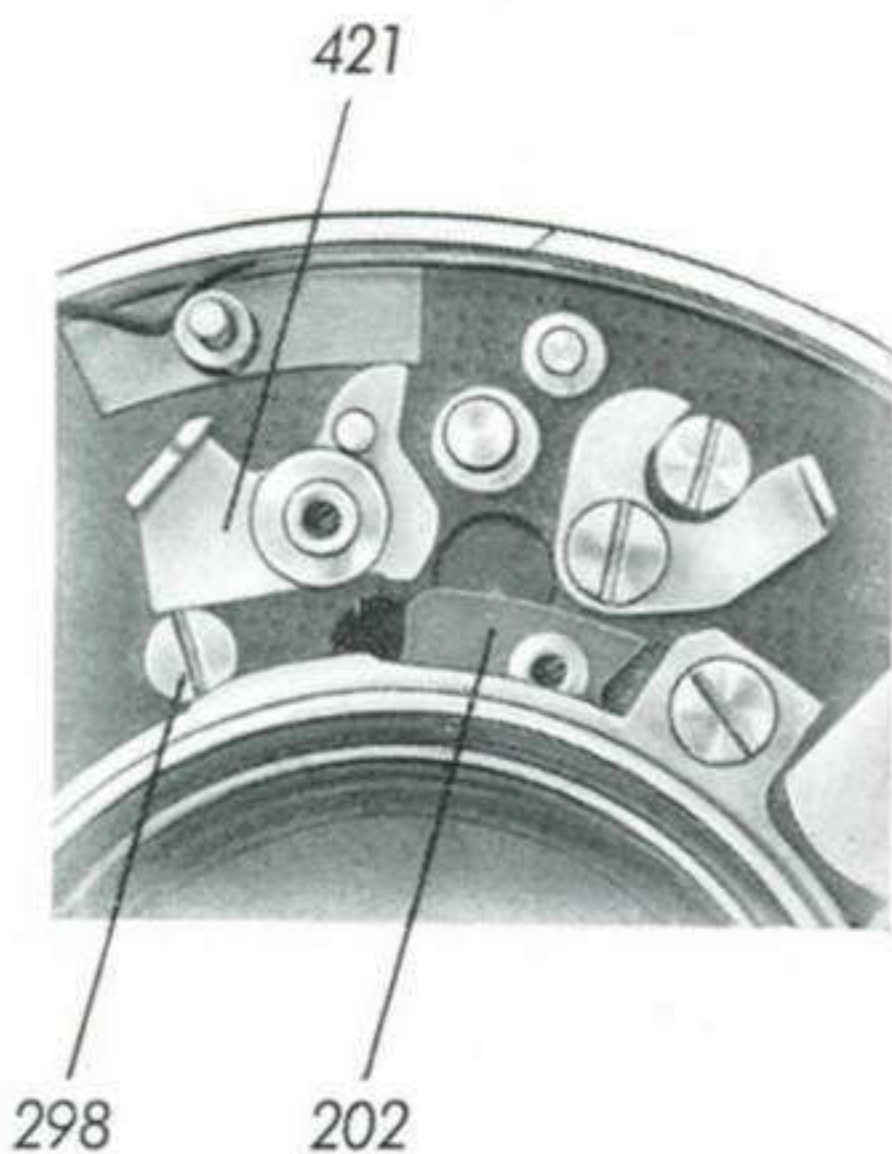


Fig. 7

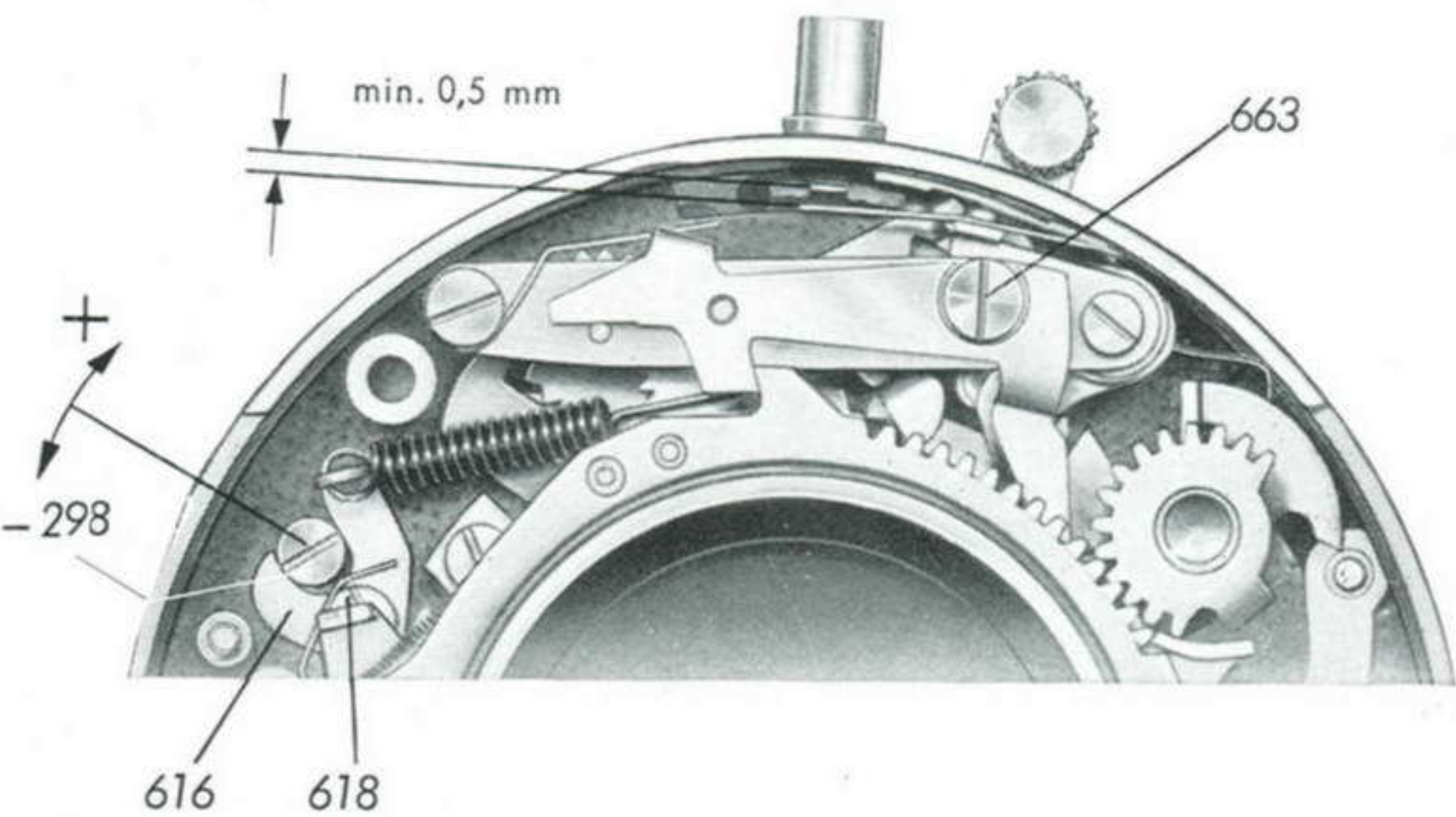


Fig. 8

X-Stellung
P= min 60 gr.

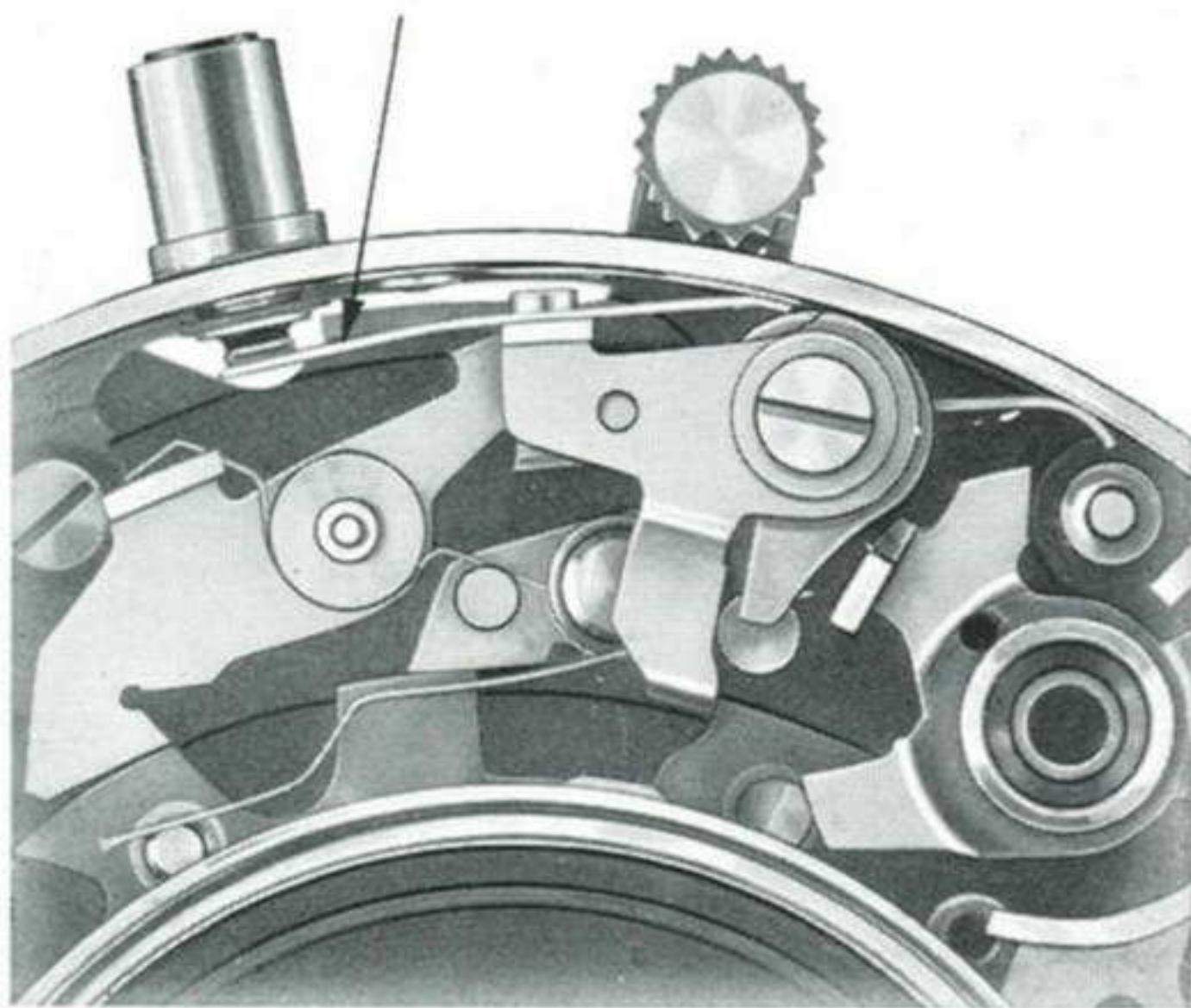
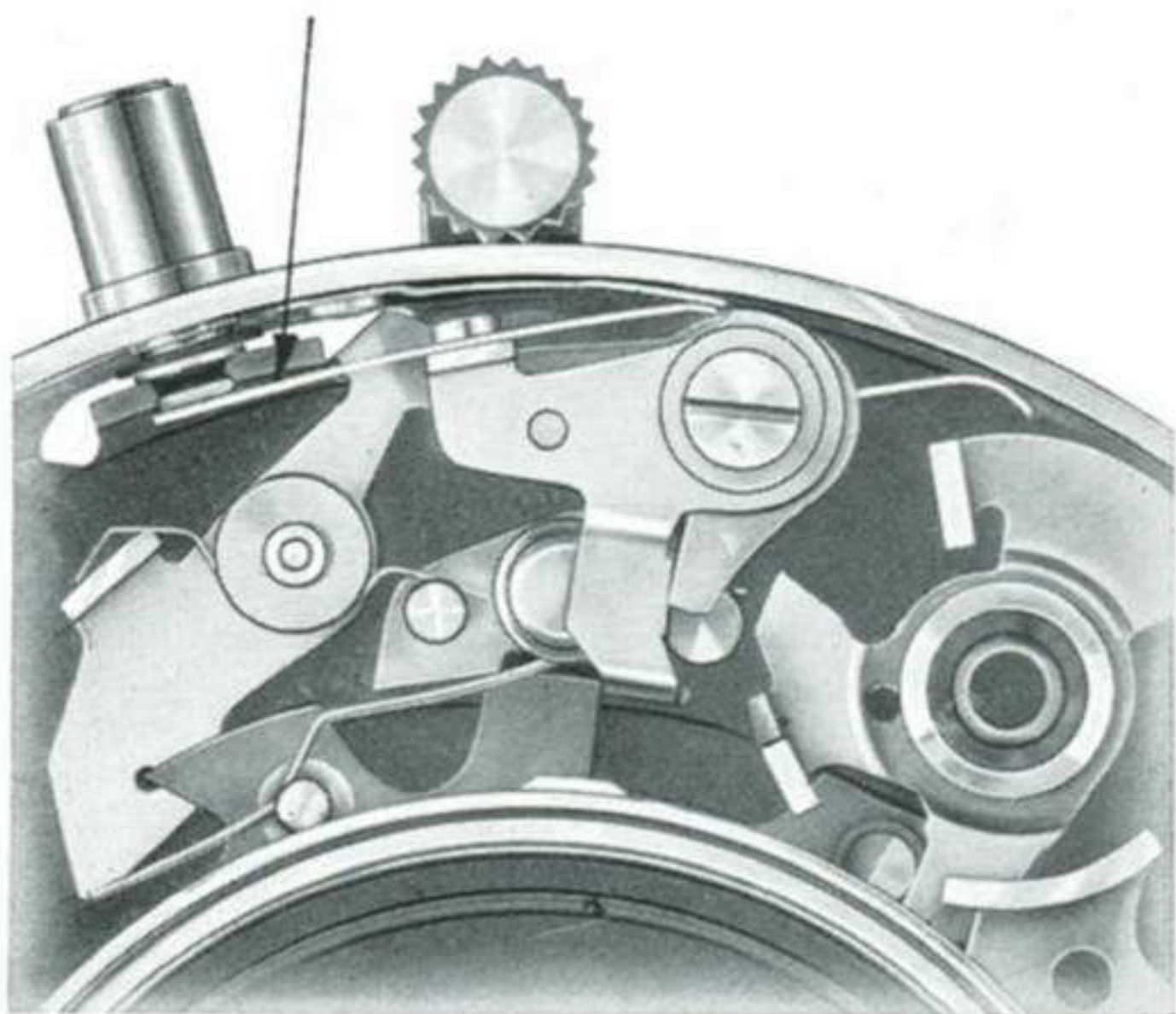


Fig. 9

M-Stellung
P= min. 10 gr.



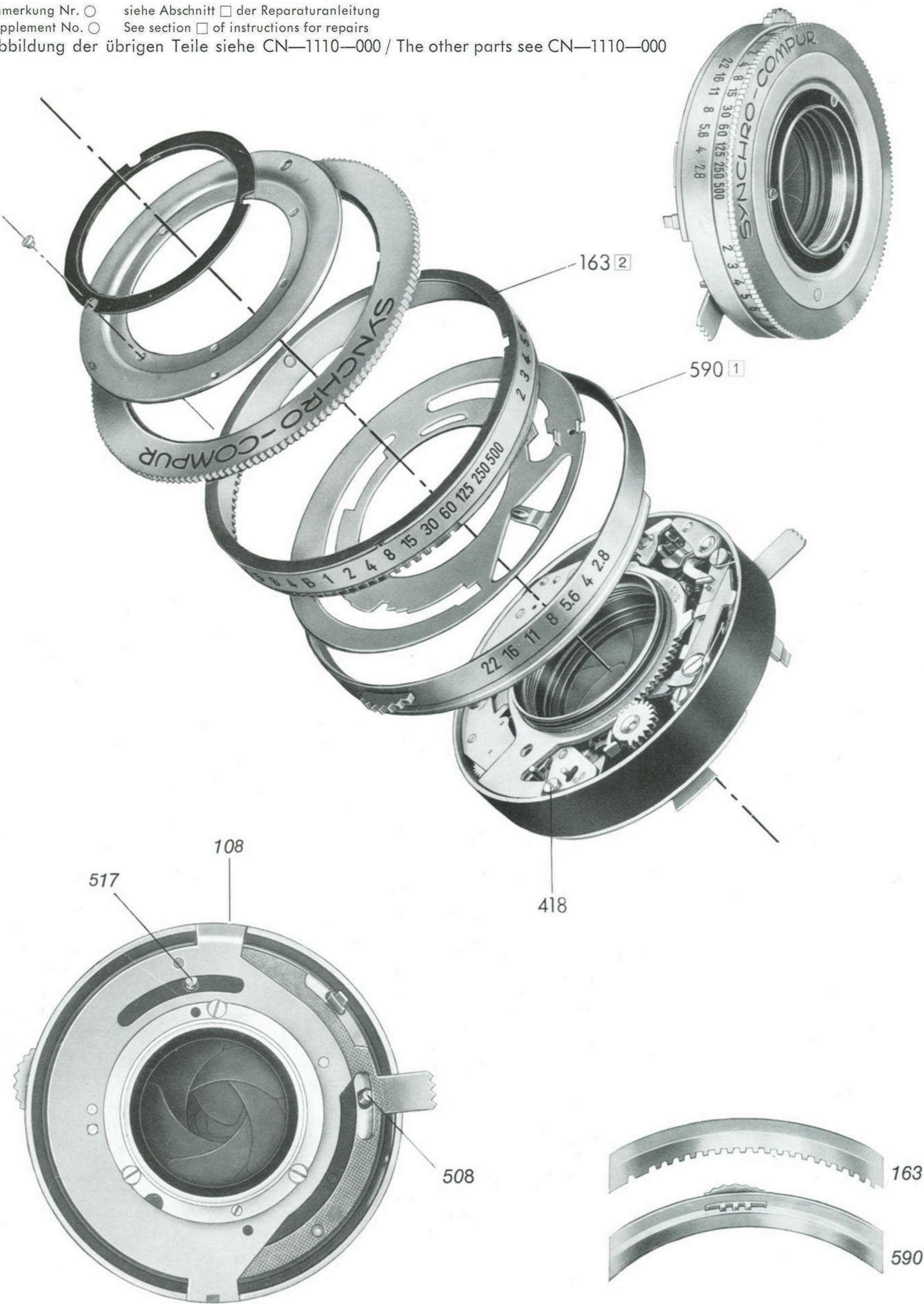
SYNCHRO-COMPUR 00-MXV

Standard

CN-1110-010

Tafel 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs
Abbildung der übrigen Teile siehe CN—1110—000 / The other parts see CN—1110—000



COMPUR-WERK MÜNCHEN

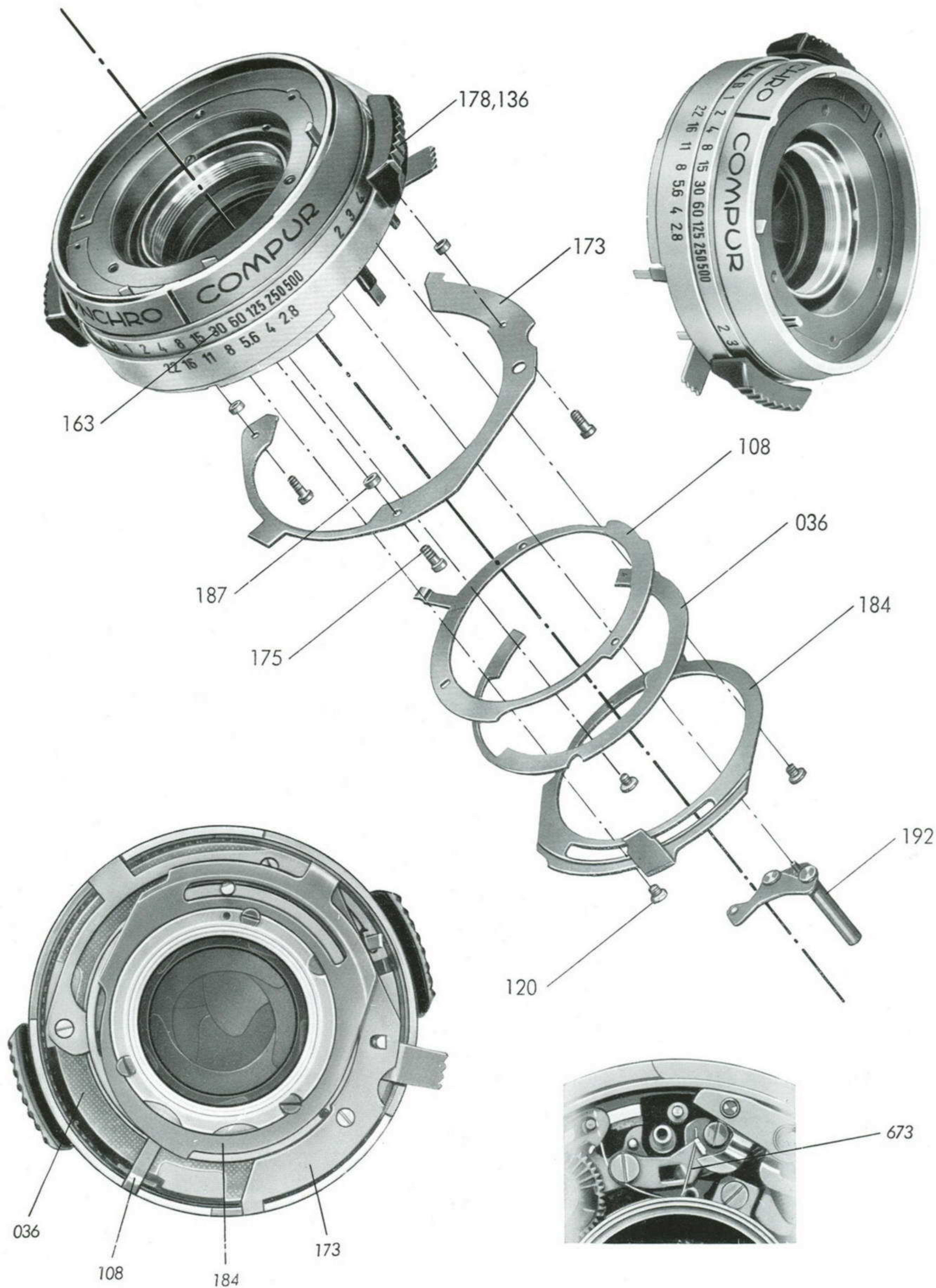
SYNCHRO-COMPUR 00-MXV

Standard
mit Lichtwertnachführung und automatischer Schärfentiefeanzeige

CN-1110-016

Tafel 1

Abbildung der übrigen Teile siehe CN-1110—018, CN-1110—010 und CN-1110—000
The other parts see CN-1110—018, CN-1110—010 and CN-1110—000



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV*) Standard

mit automatischer Schärfentiefeanzeige
with automatic depth-of-field indicator

CN-1110-018

Tafel 1

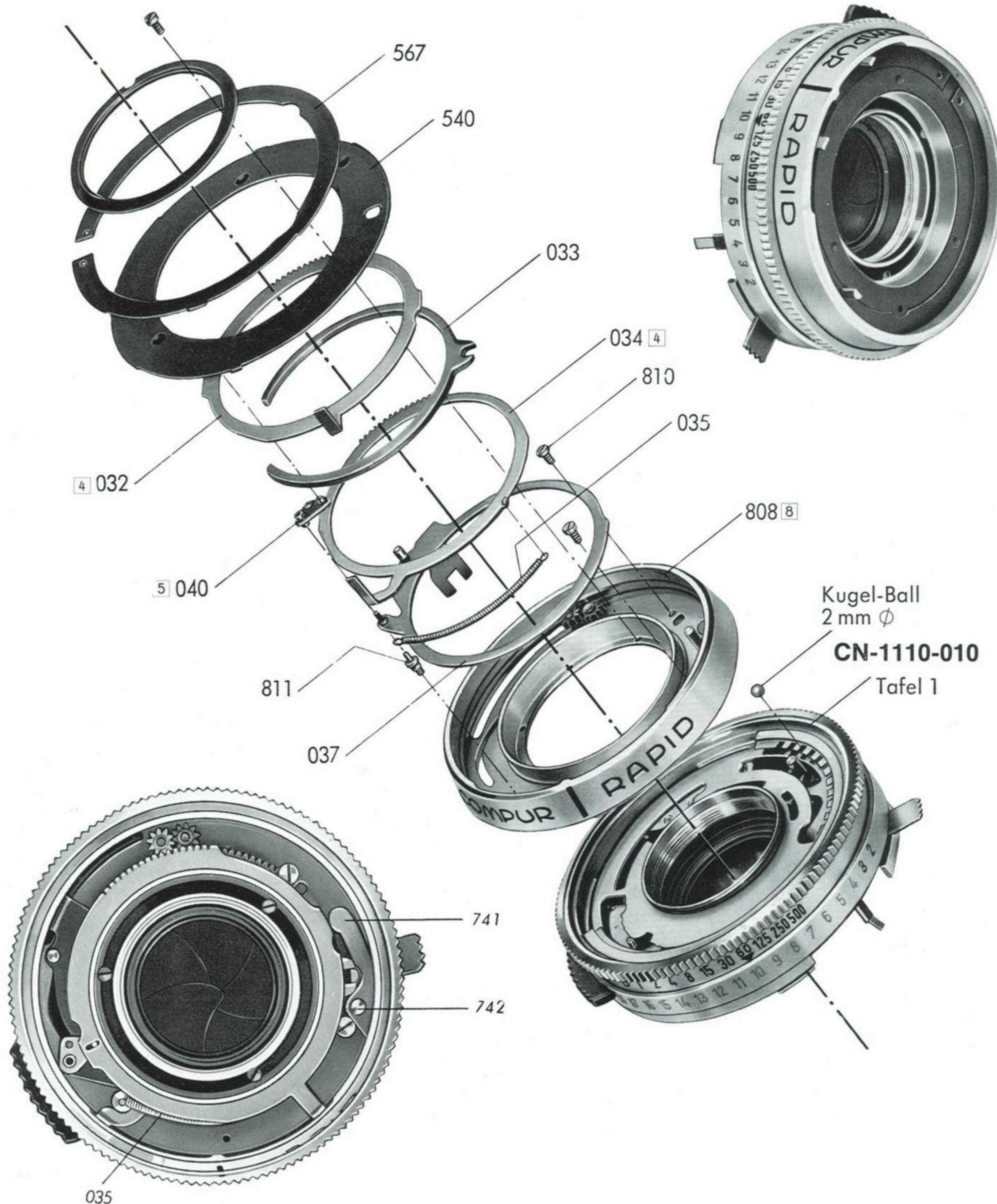
Plate 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

Abbildung der übrigen Teile siehe CN-1110-010 und CN-1110-000 / The other parts see CN-1110-010 and CN-1110-000

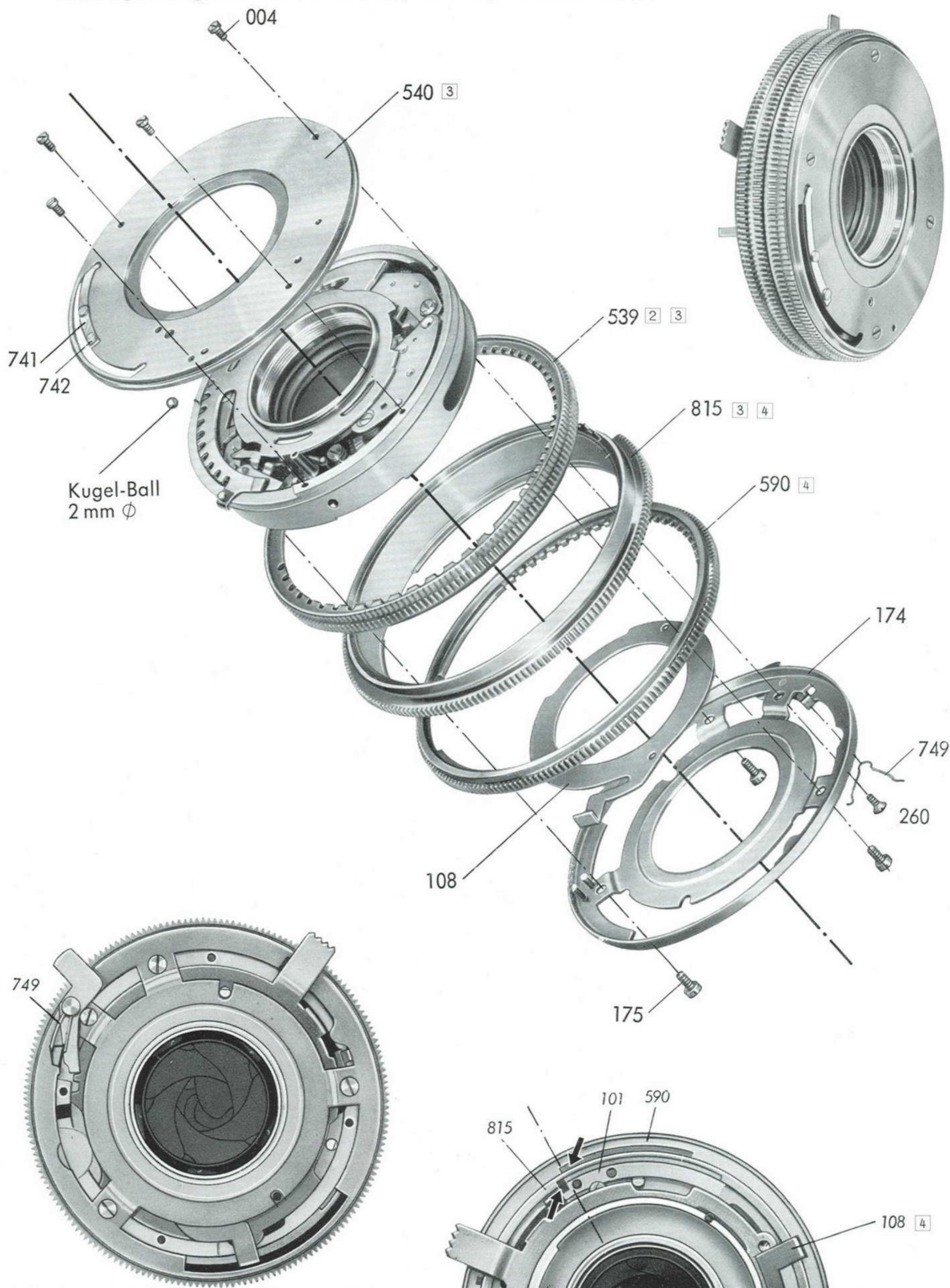
*) Da aus dieser Normtype nur **ein** Spezialverschluss CS-1110-355 entwickelt wurde, zeigt die Abbildung die Spezialausführung.

Of the standard shutter*) only one special shutter CS-1110-355 (see photo below) has been developed.

**COMPUR-WERK MÜNCHEN**

SYNCHRO-COMPUR 00-MXV**Sondermodell mit verzahnten Einstellringen****Special type with toothed setting rings****CN-1110-019****Tafel 1****Plate 1**Anmerkung Nr. ○
Supplement No. ○siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs

Abbildung der übrigen Teile siehe CN-1110-000 / The other parts see CN-1110-000

**COMPUR-WERK MÜNCHEN**

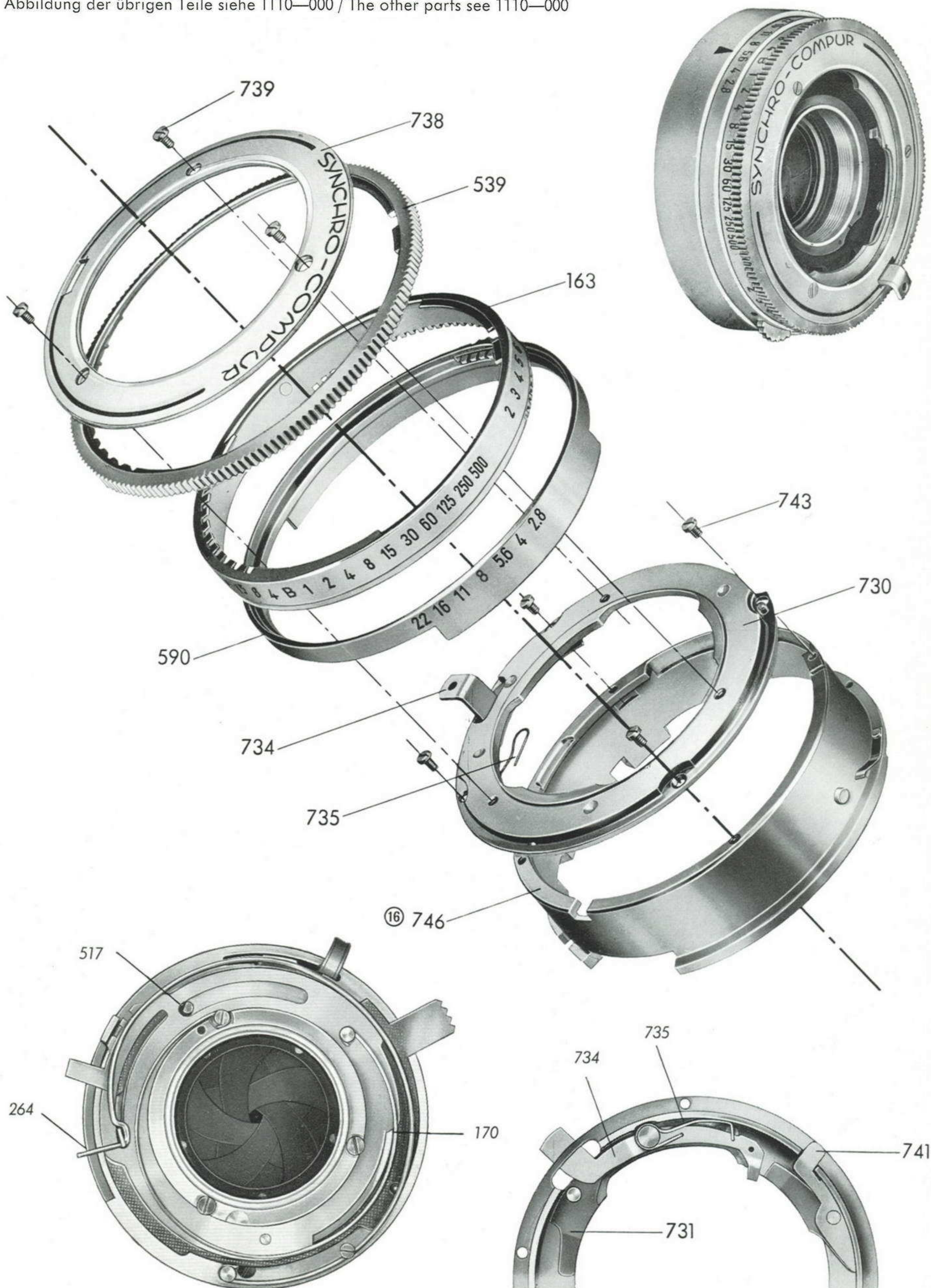
SYNCHRO-COMPUR 00-MXV

BH Reflex

1110-020

Tafel 1

Abbildung der übrigen Teile siehe 1110-000 / The other parts see 1110-000

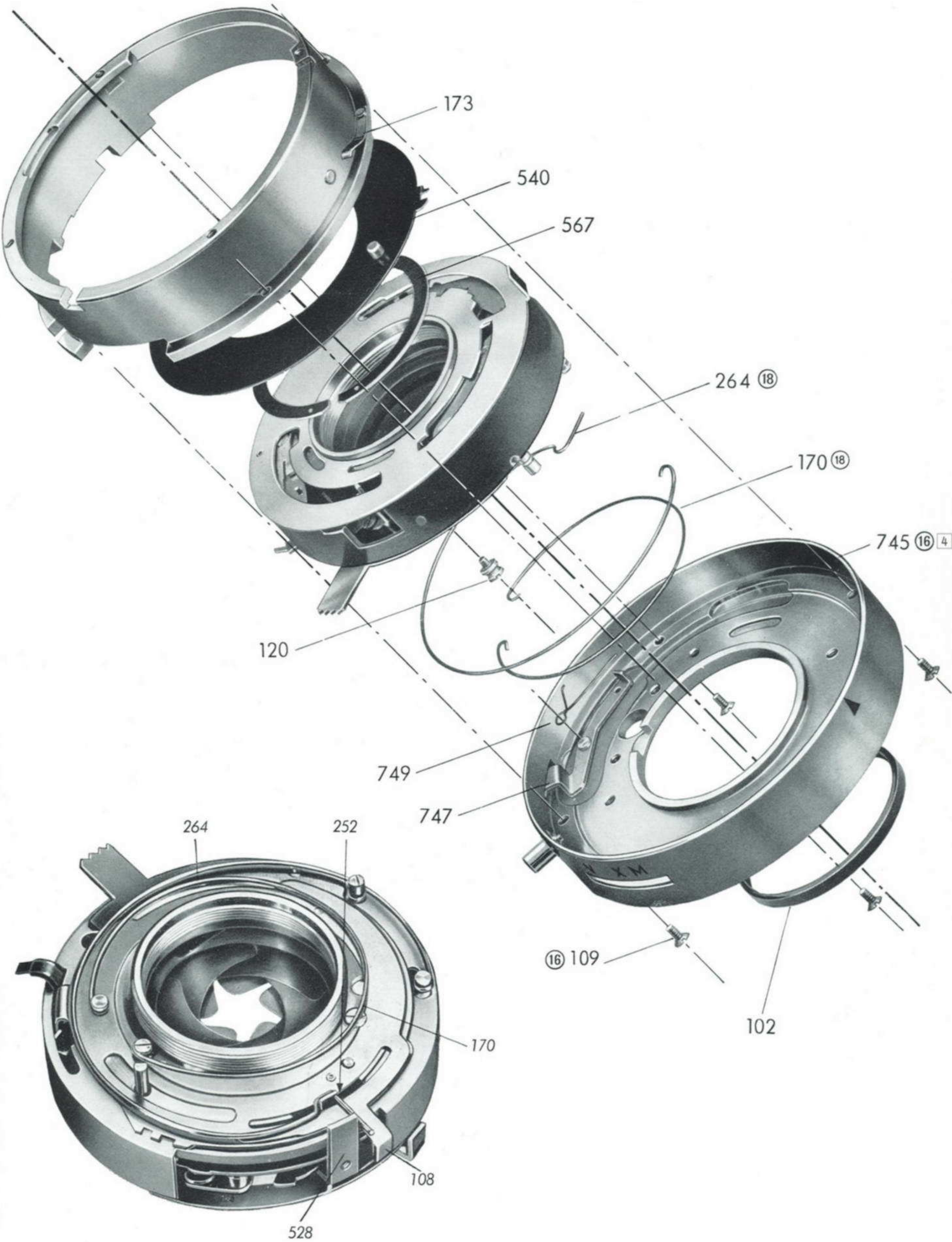


COMPUR-WERK MÜNCHEN

SYNCHRO - COMPUR 00-MXV
BH Reflex

CN-1110-020
Tafel 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

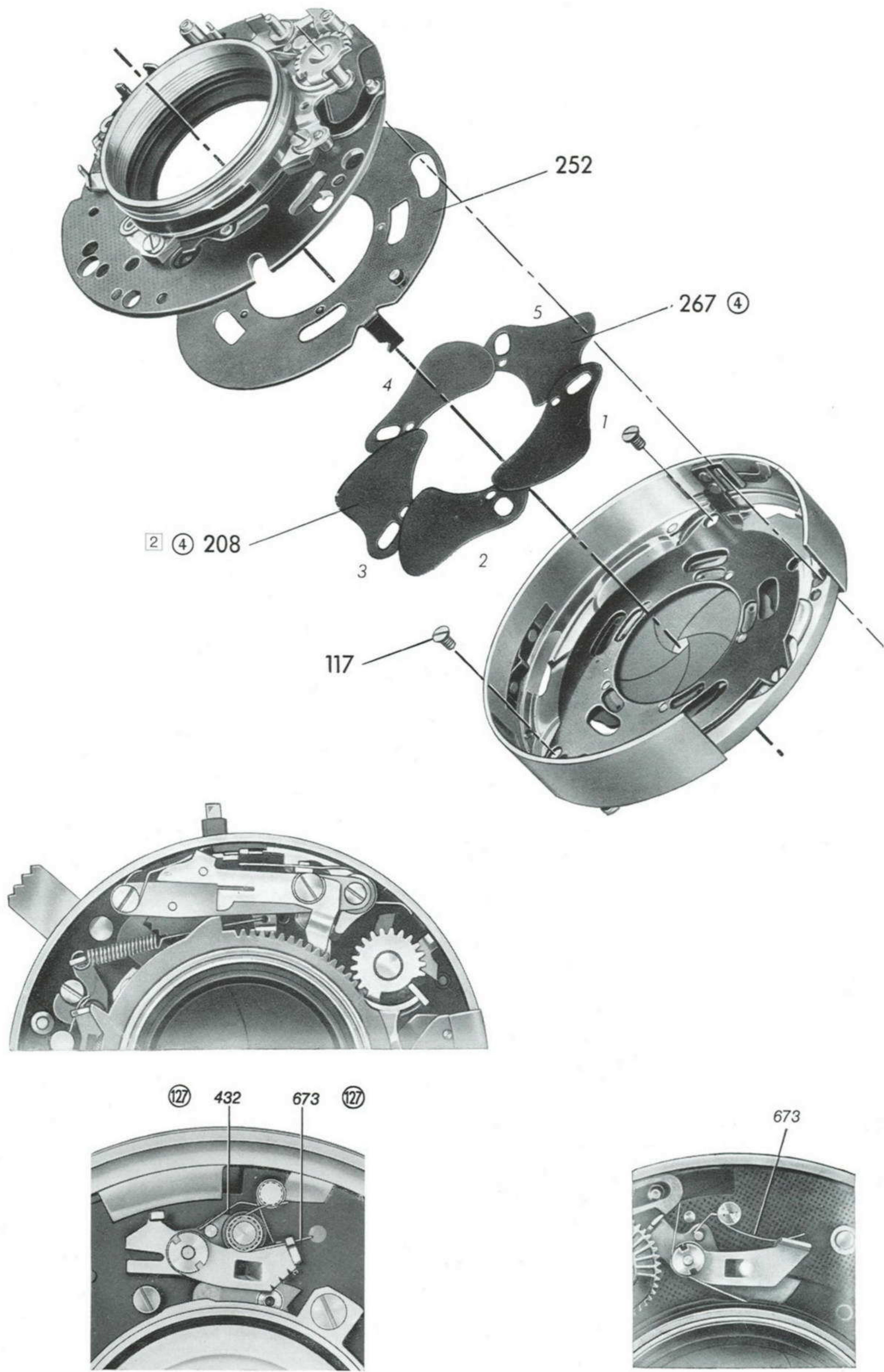


COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV
BH Reflex

CN-1110-020
Tafel 3

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 00-MXV

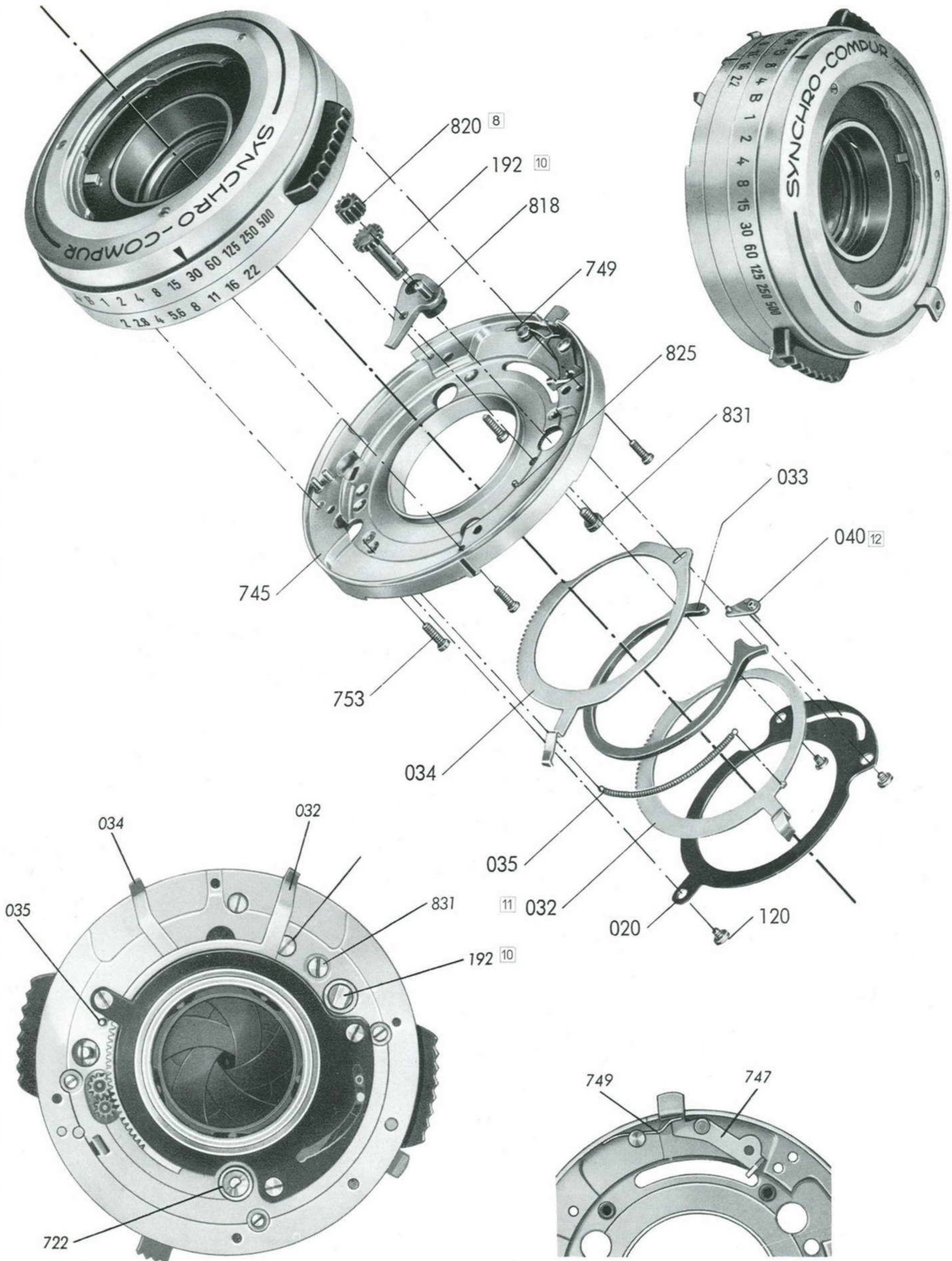
BH-Reflex

mit Lichtwertnachführung und automatischer Schärfentiefeanzeige
with light value follow-up system and automatic depth-of-field-indicator

CN-1110-024

Tafel 1
Plate 1

Abbildung der übrigen Teile siehe CN-1110-000 / The other parts see CN-1110-000
Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



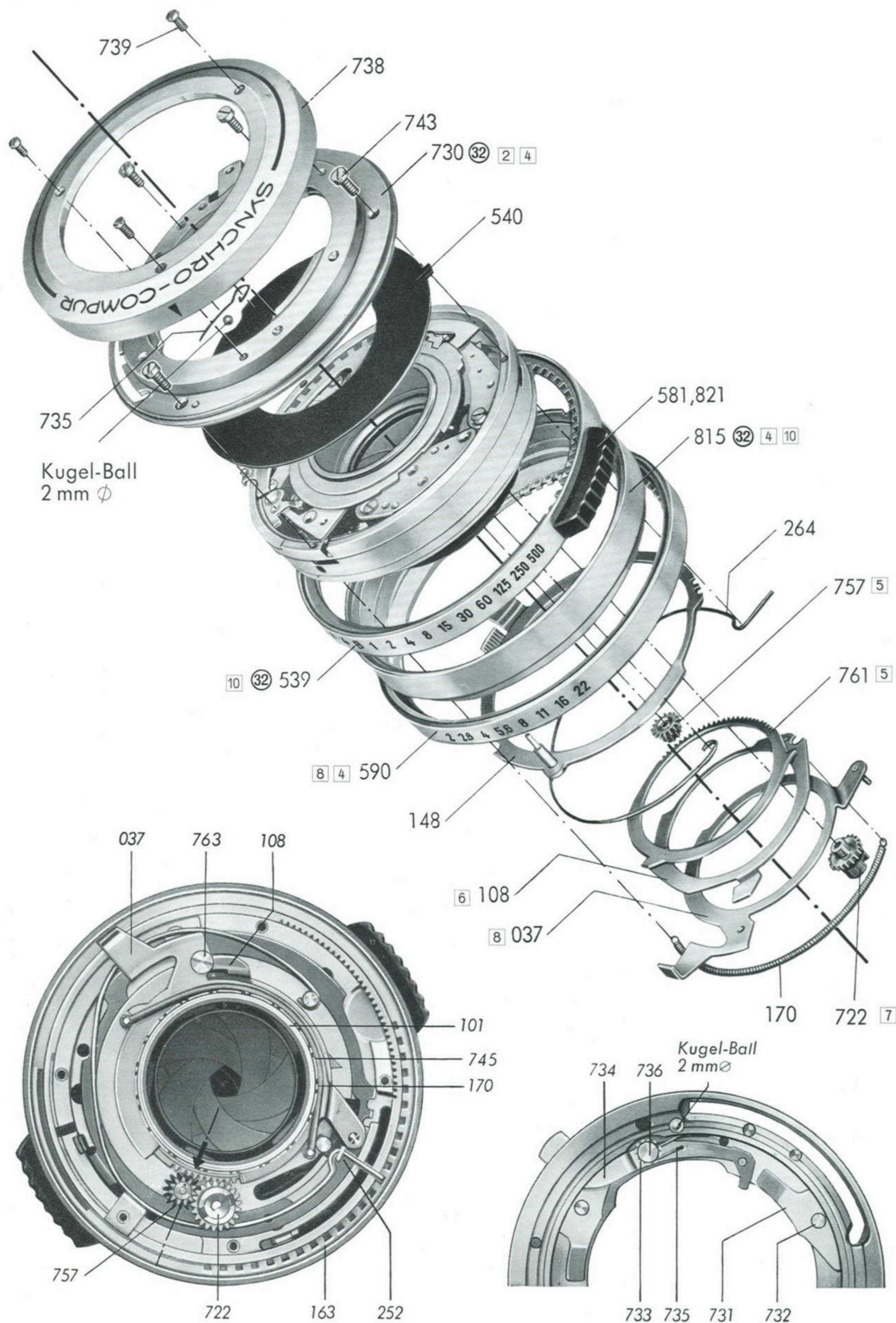
SYNCHRO-COMPUR 00-MXV BH-REFLEX
 mit Lichtwertnachführung und automatischer Schärfentiefeanzeige
 With light value follow-up system and automatic depth-of-field-indicator

CN-1110-024

Tafel 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung

Supplement No. ○ See section □ of instructions for repairs



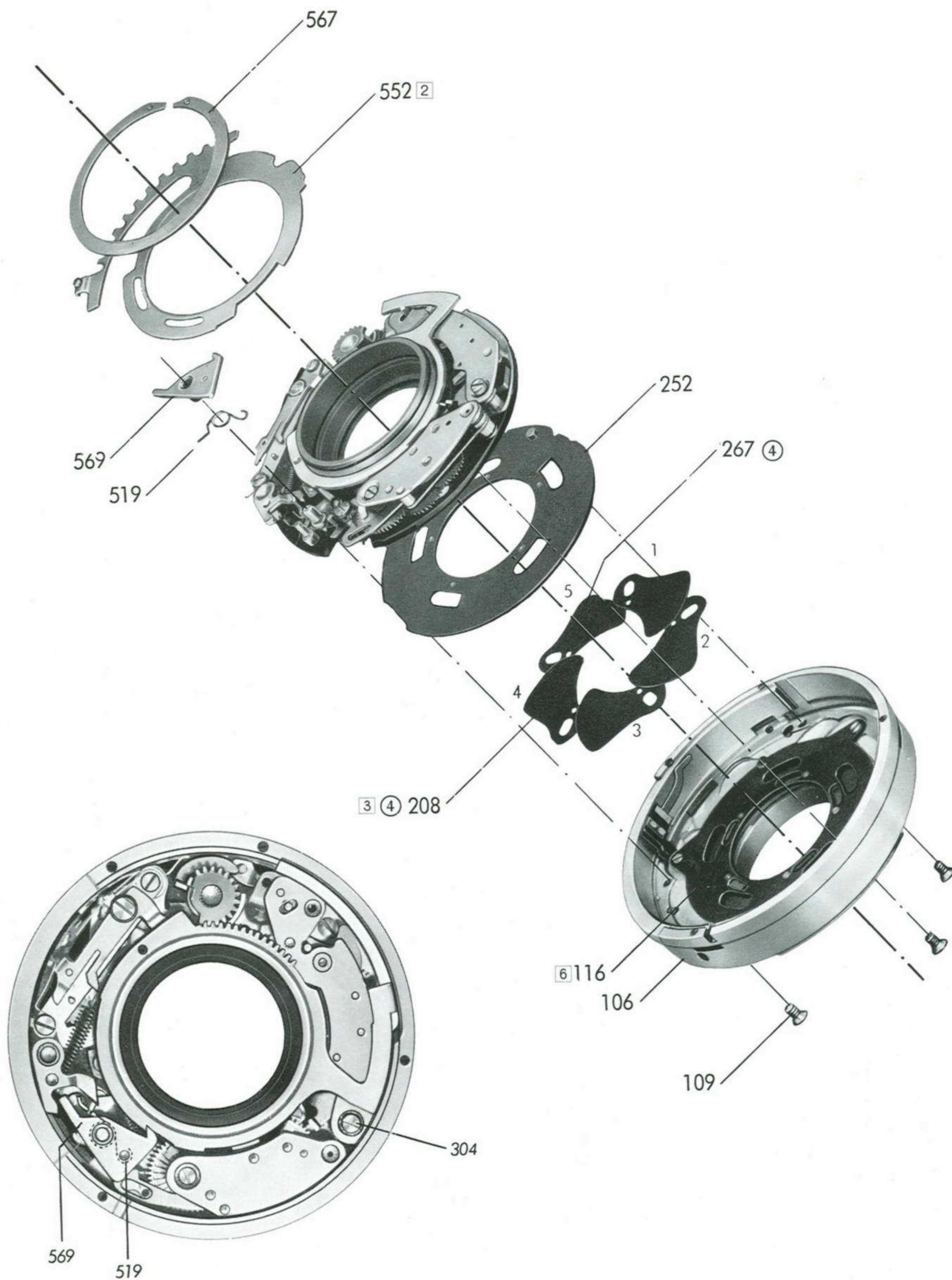
COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV BH-REFLEX
 mit Lichtwertnachführung und automatischer Schärfentiefeanzeige
 With light value follow-up system and automatic depth-of-field-indicator

CN-1110-024

Tafel 3

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
 Supplement No. ○ See section □ of instructions for repairs

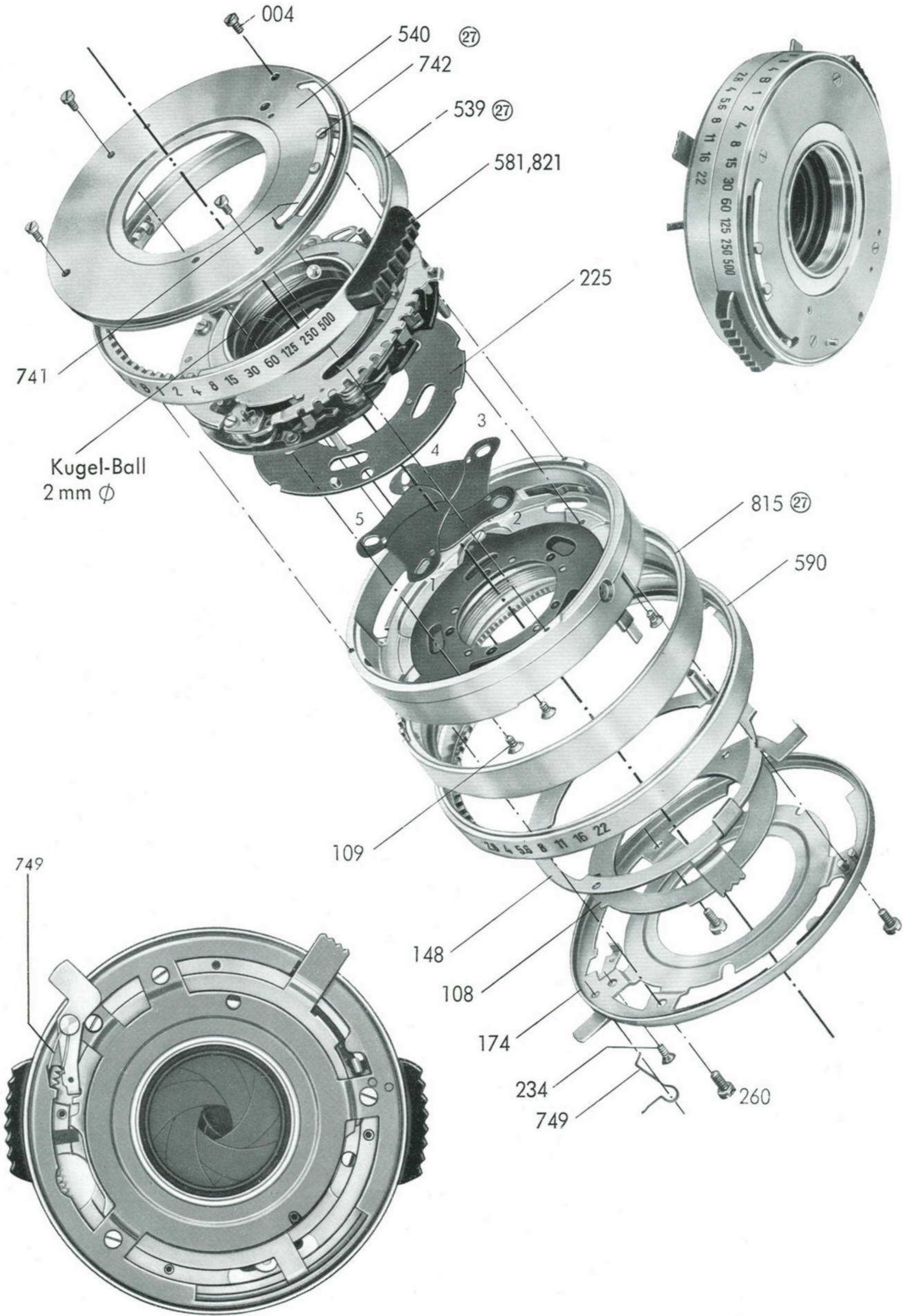


COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV
Standard
mit Lichtwertnachführung

CN-1110-025
Tafel 1

Abbildung der übrigen Teile siehe CN-1110—000 / The other parts see CN-1110—000



SYNCHRO-COMPUR 00-MXV

Standard

mit Lichtwertnachführung und automatischer Schärfentiefeanzeige

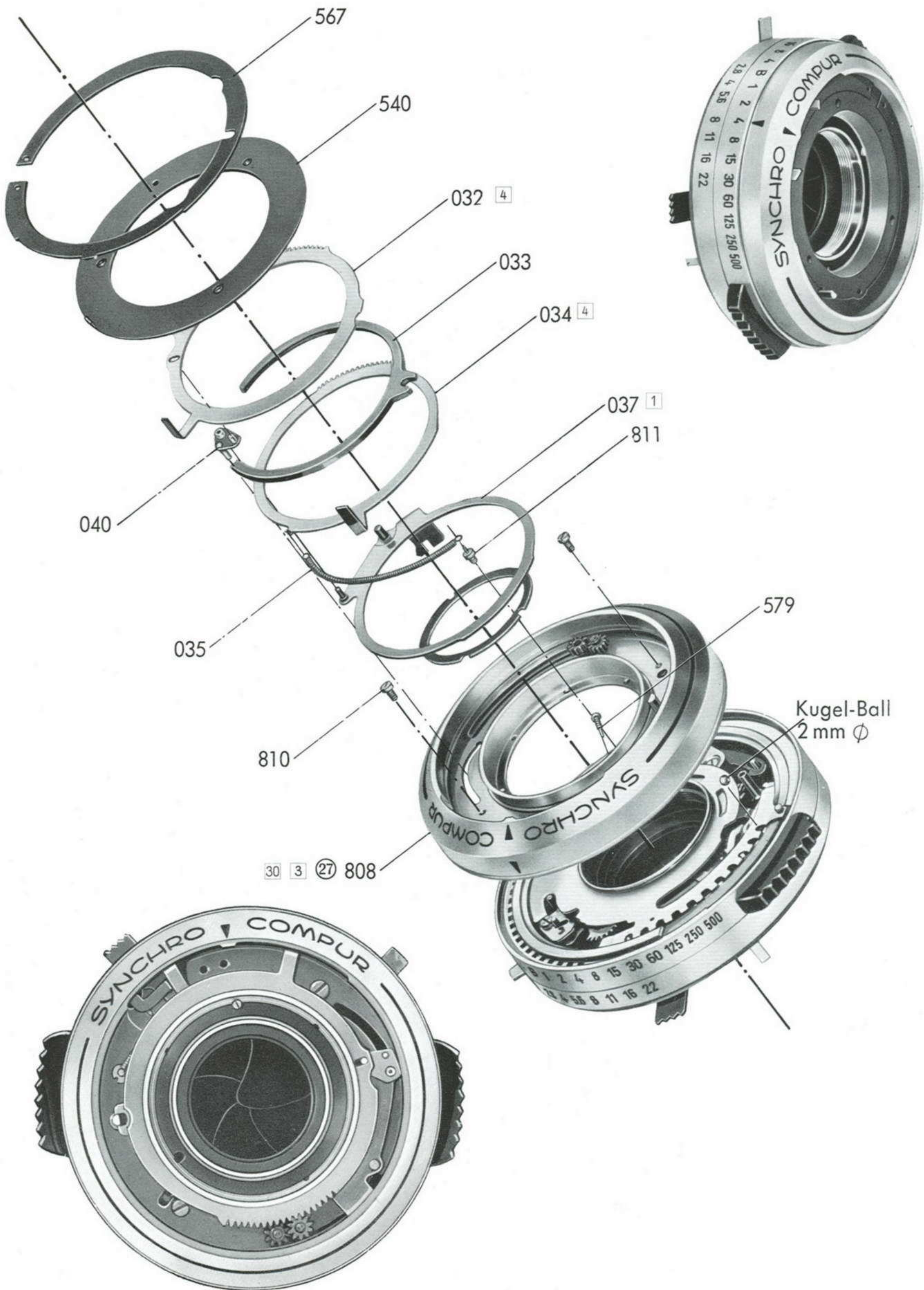
With light value follow-up system and automatic depth-of-field-indicator

CN-1110-026

Tafel 1
Plate 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

Abbildung der übrigen Teile siehe CN-1110-010 und CN-1110-000 / The other parts see CN-1110-010 and CN-1110-000



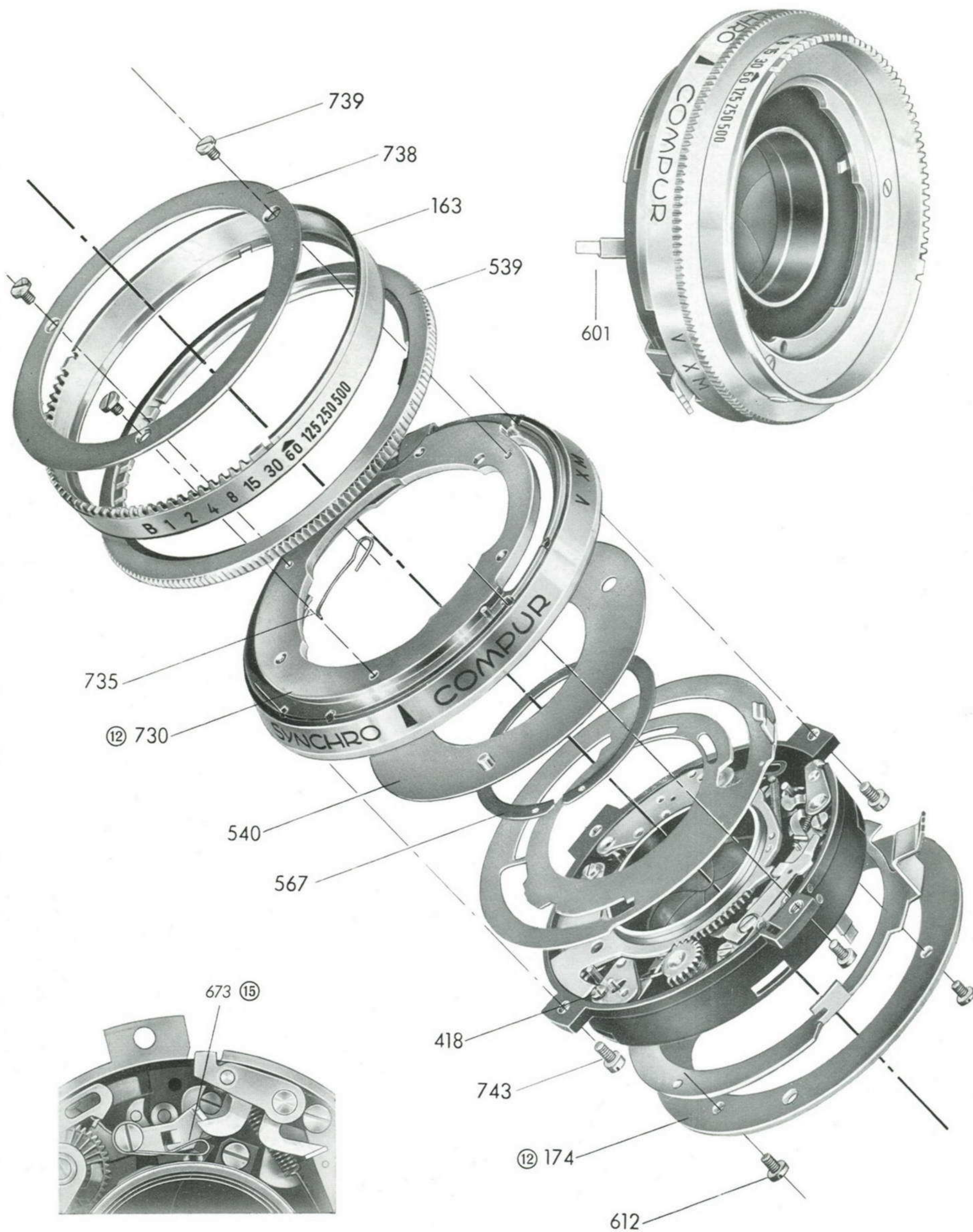
SYNCHRO-COMPUR 00-MXV

Weit

1110-030

Tafel 1

Abbildung der übrigen Teile siehe 1110—000 / The other parts see 1110—000

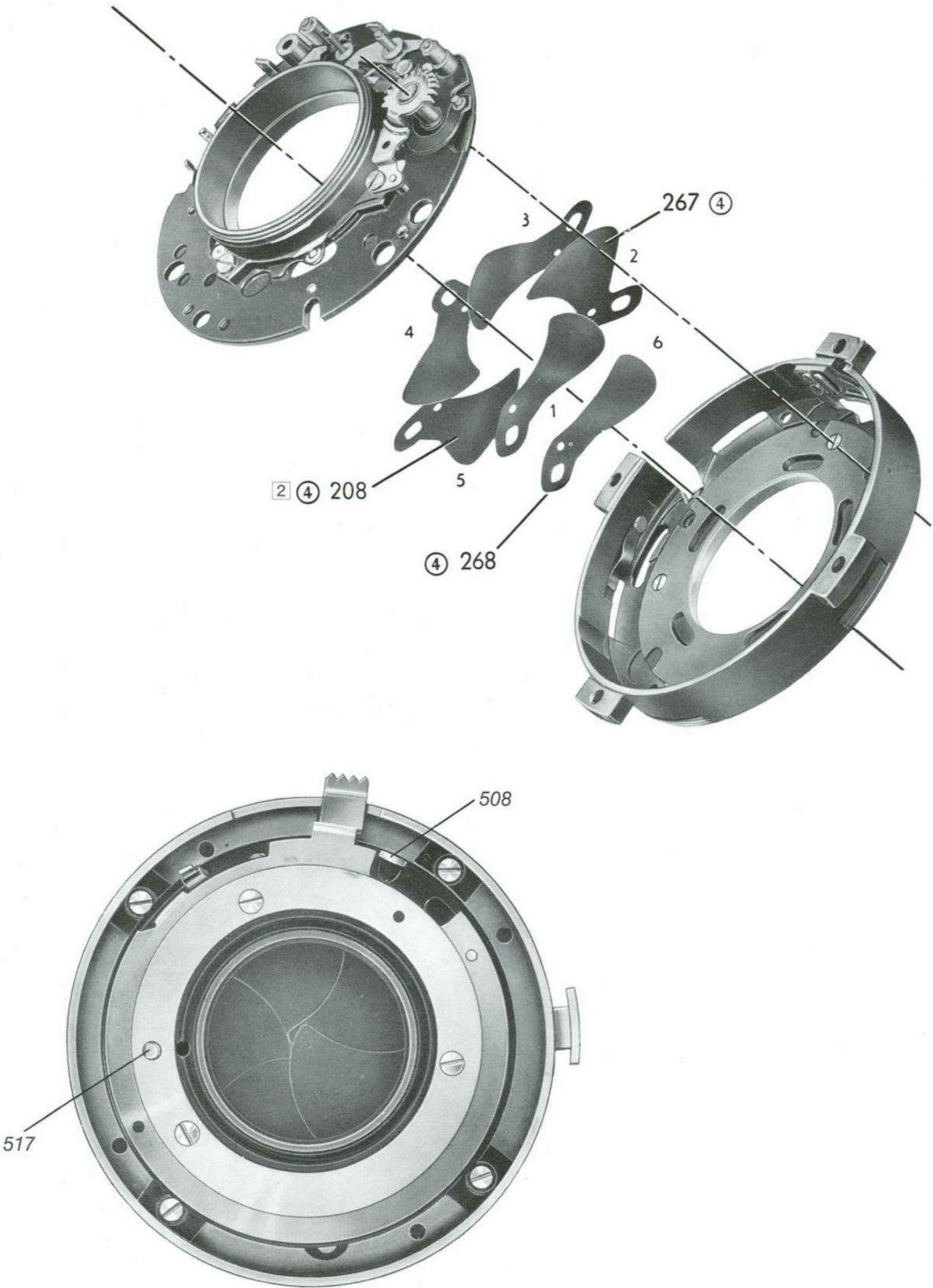


COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV
Weit
Wide

CN-1110-030
Tafel 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 00-MXV

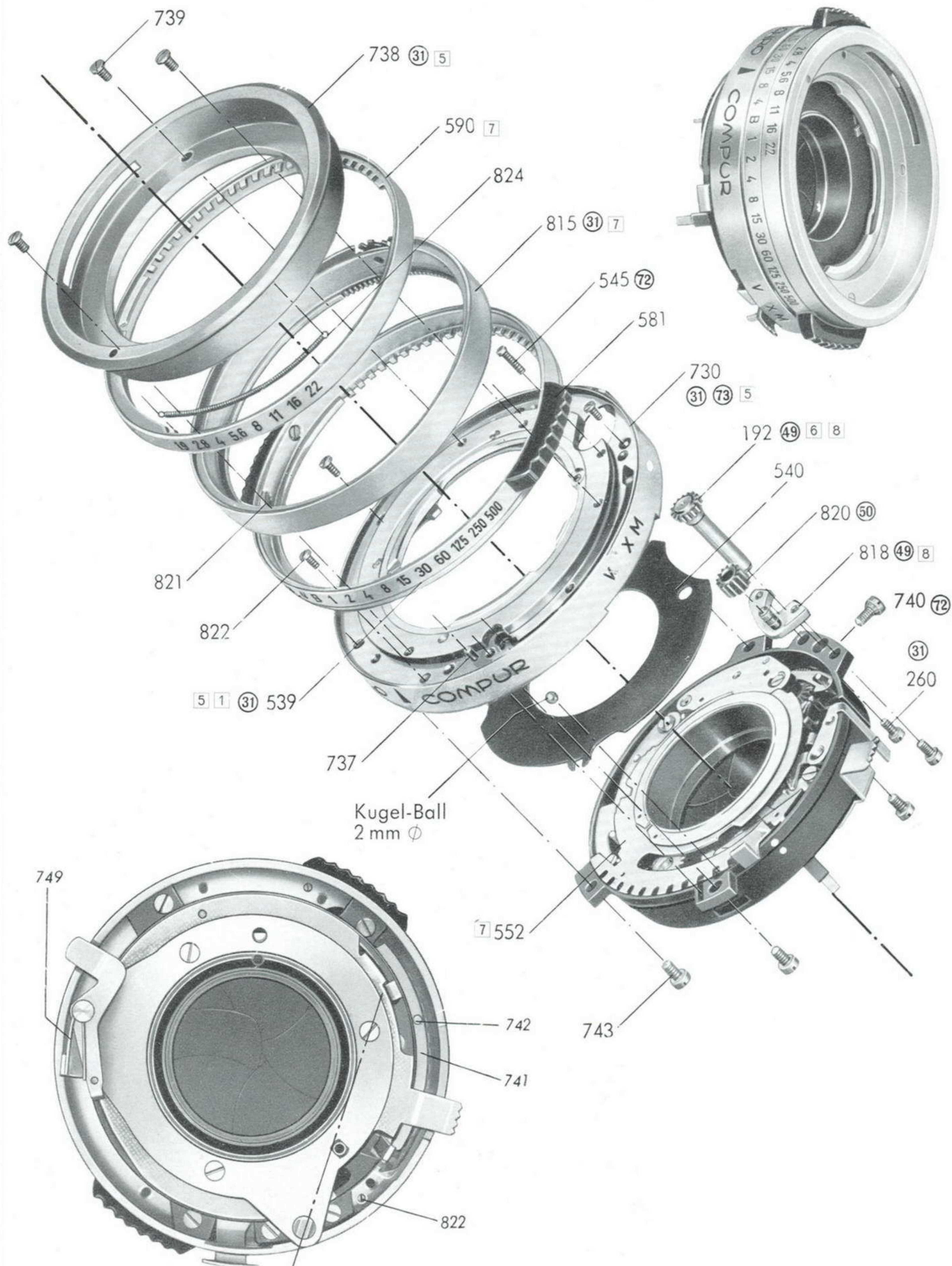
Weit — mit Lichtwertnachführung
Wide — with light value follow-up system

CN-1110-034

Tafel 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

Abbildung der übrigen Teile siehe CN-1110-000
The other parts see CN-1110-000

**COMPUR-WERK MÜNCHEN**

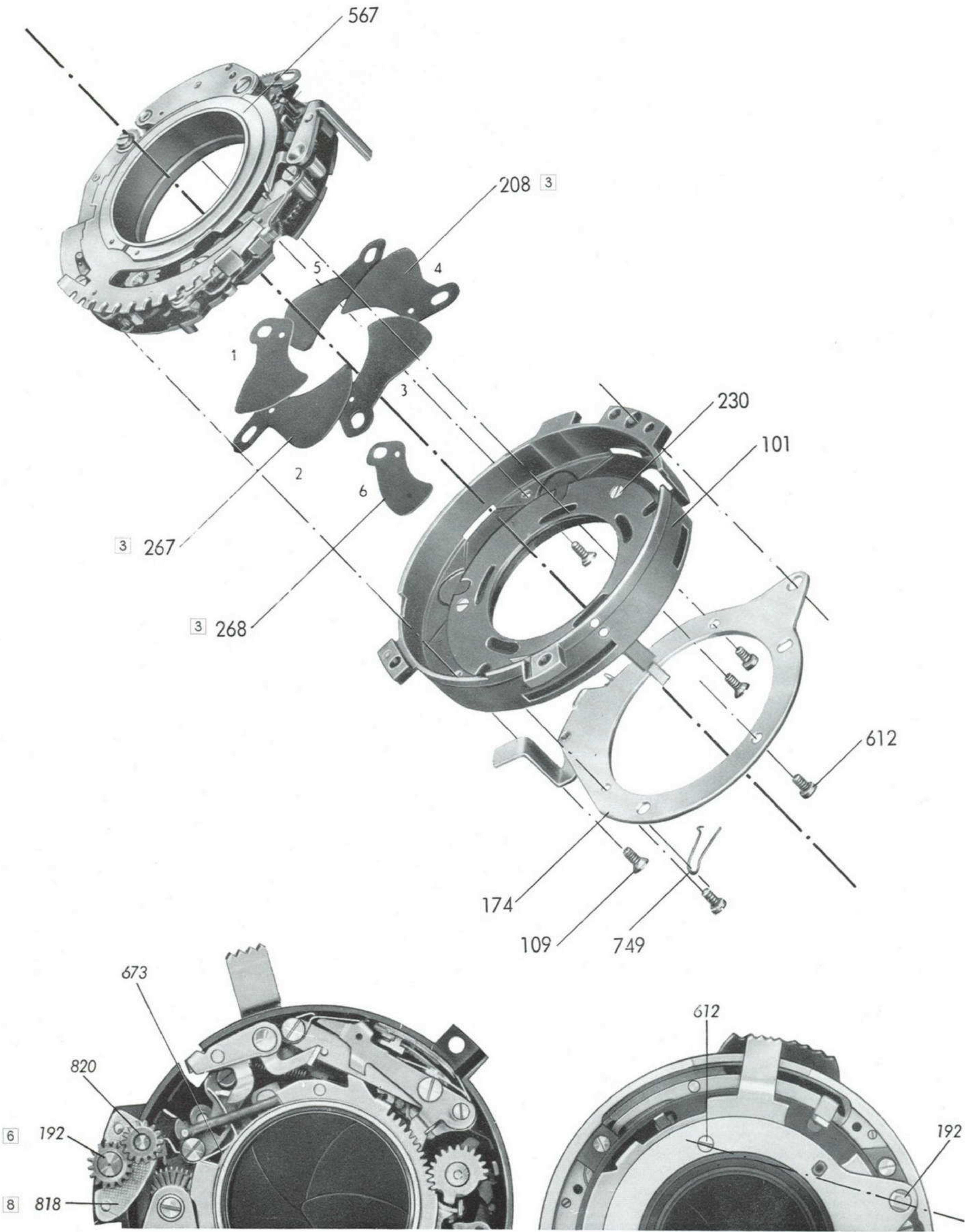
SYNCHRO-COMPUR 00-MXV Weit

mit Lichtwertnachführung
with light value follow-up system

CN-1110-034

Tafel 2
Plate 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

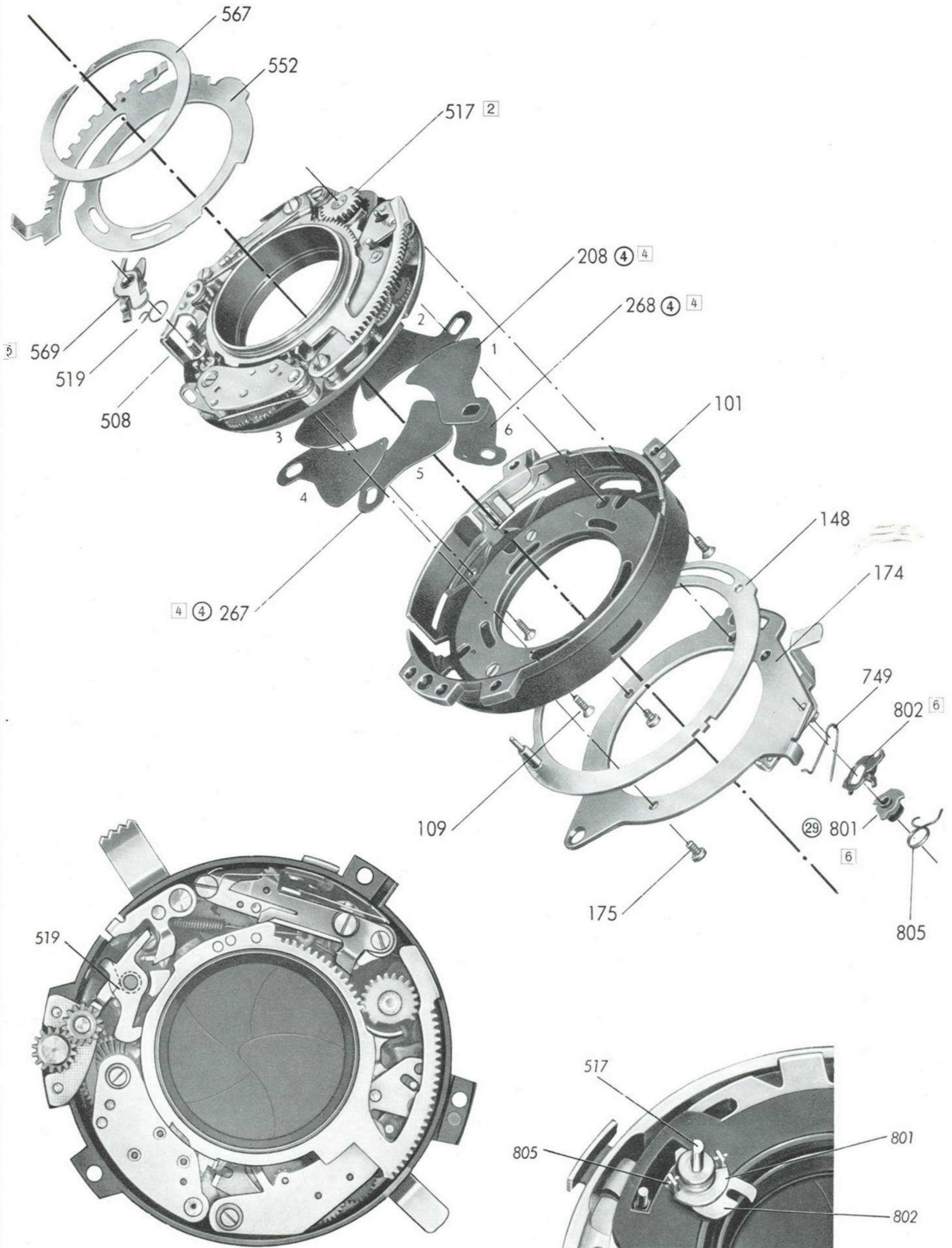


SYNCHRO-COMPUR 00-MXV Weit-Reflex
mit Lichtwertnachführung
with light value follow-up system

CN-1110-035

Tafel 2
Plate 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV

Weit-Reflex mit Lichtwertnachführung

1110-035

Tafel 3

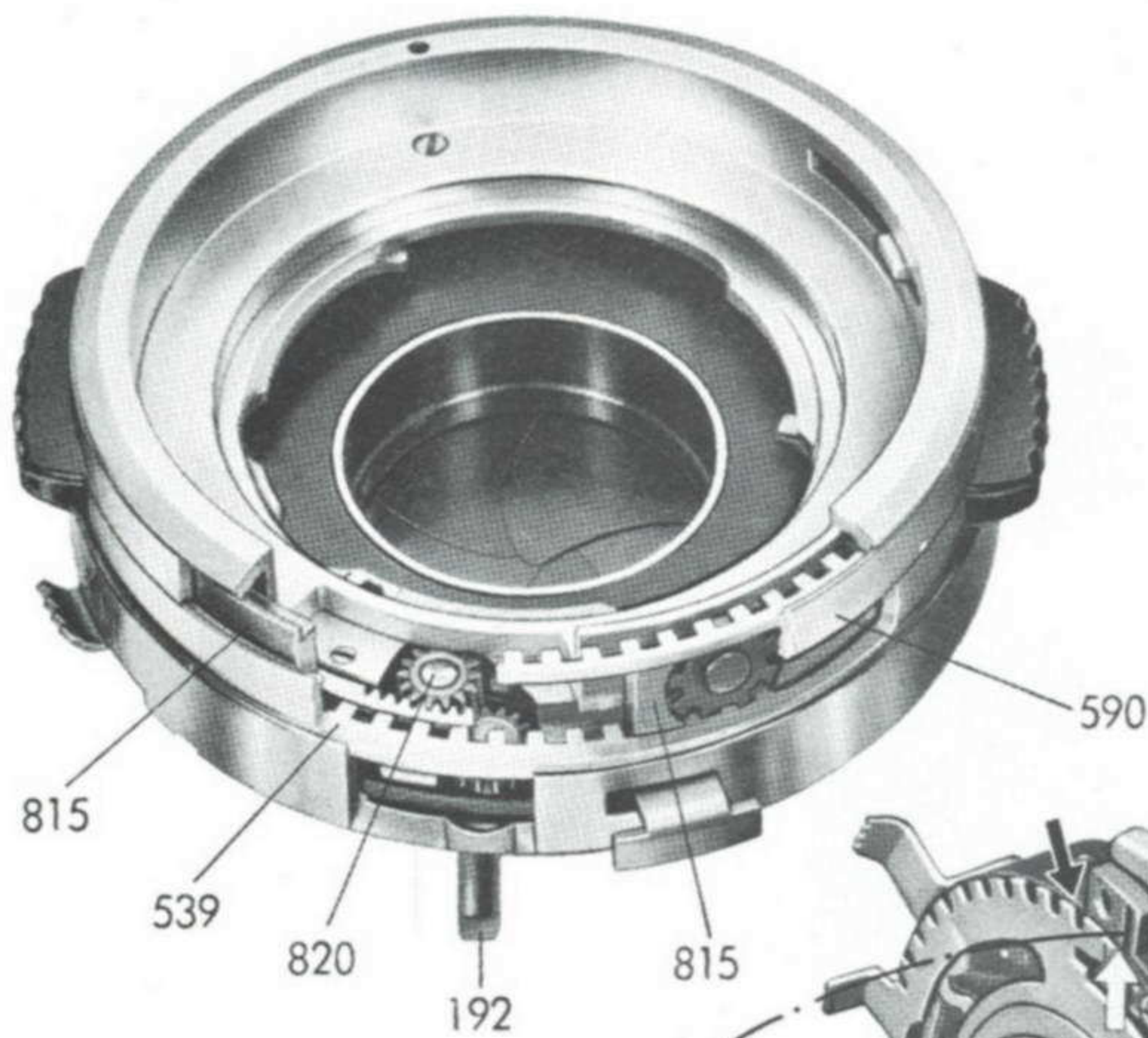


Fig. 1

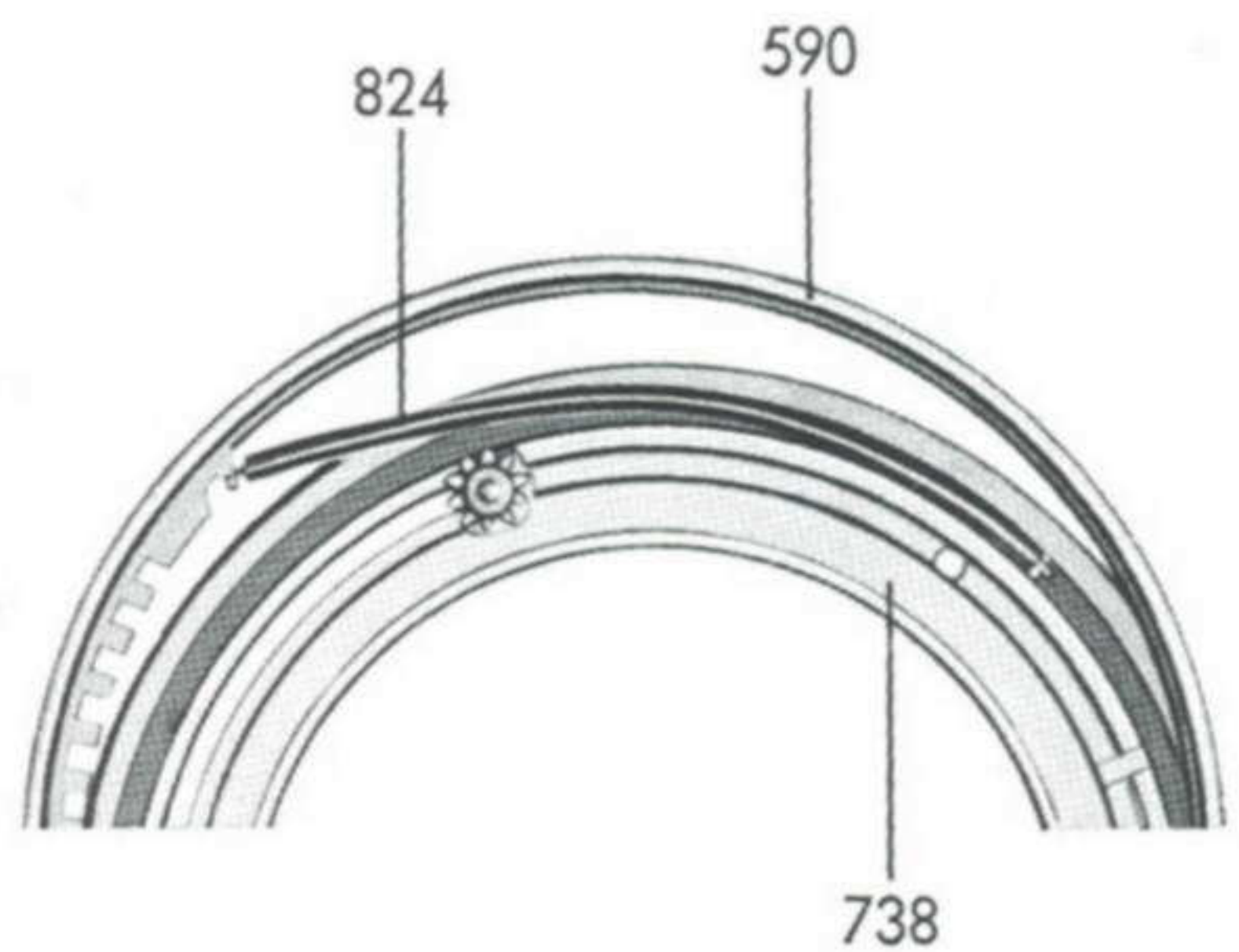


Fig. 2

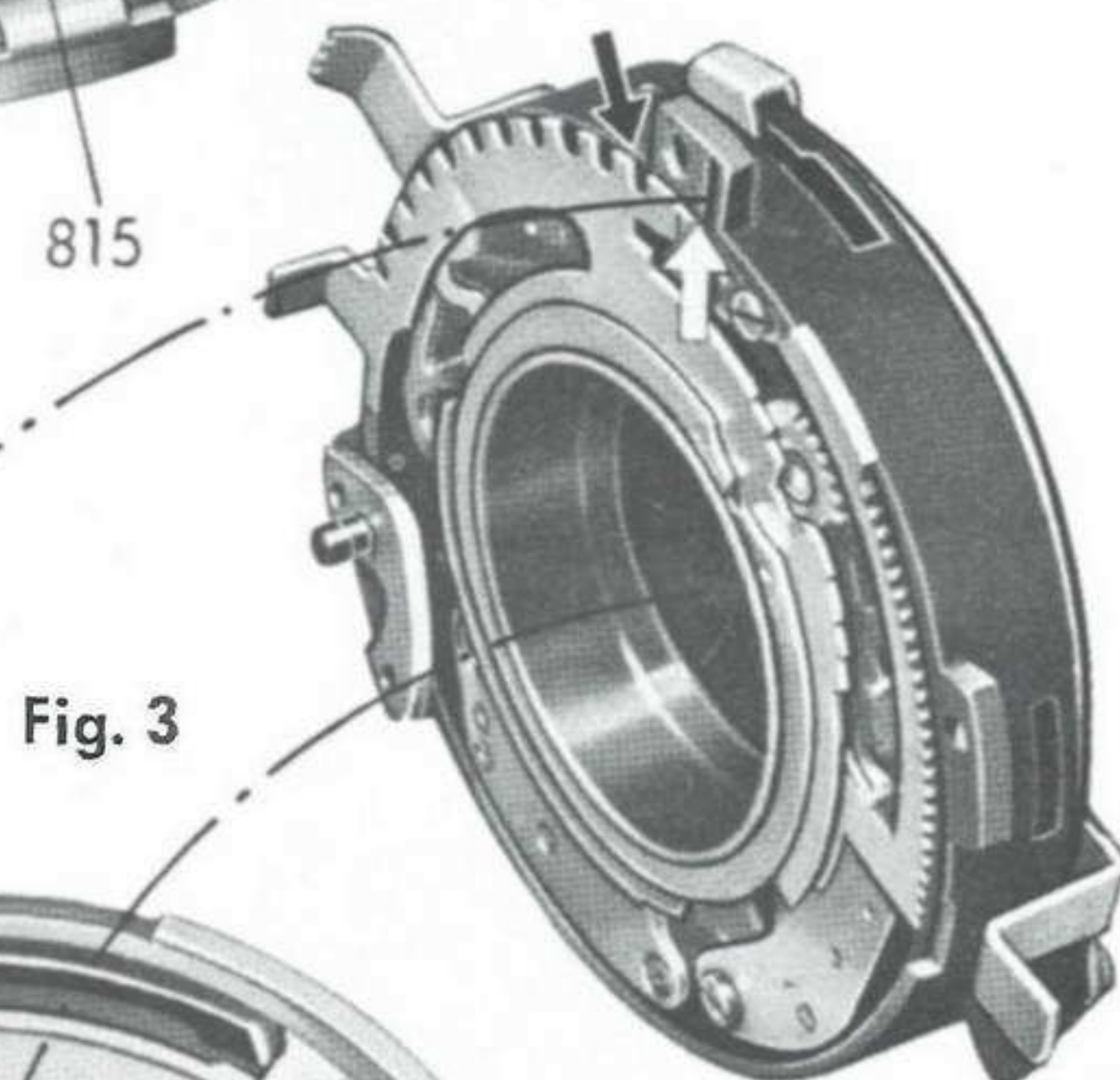


Fig. 3

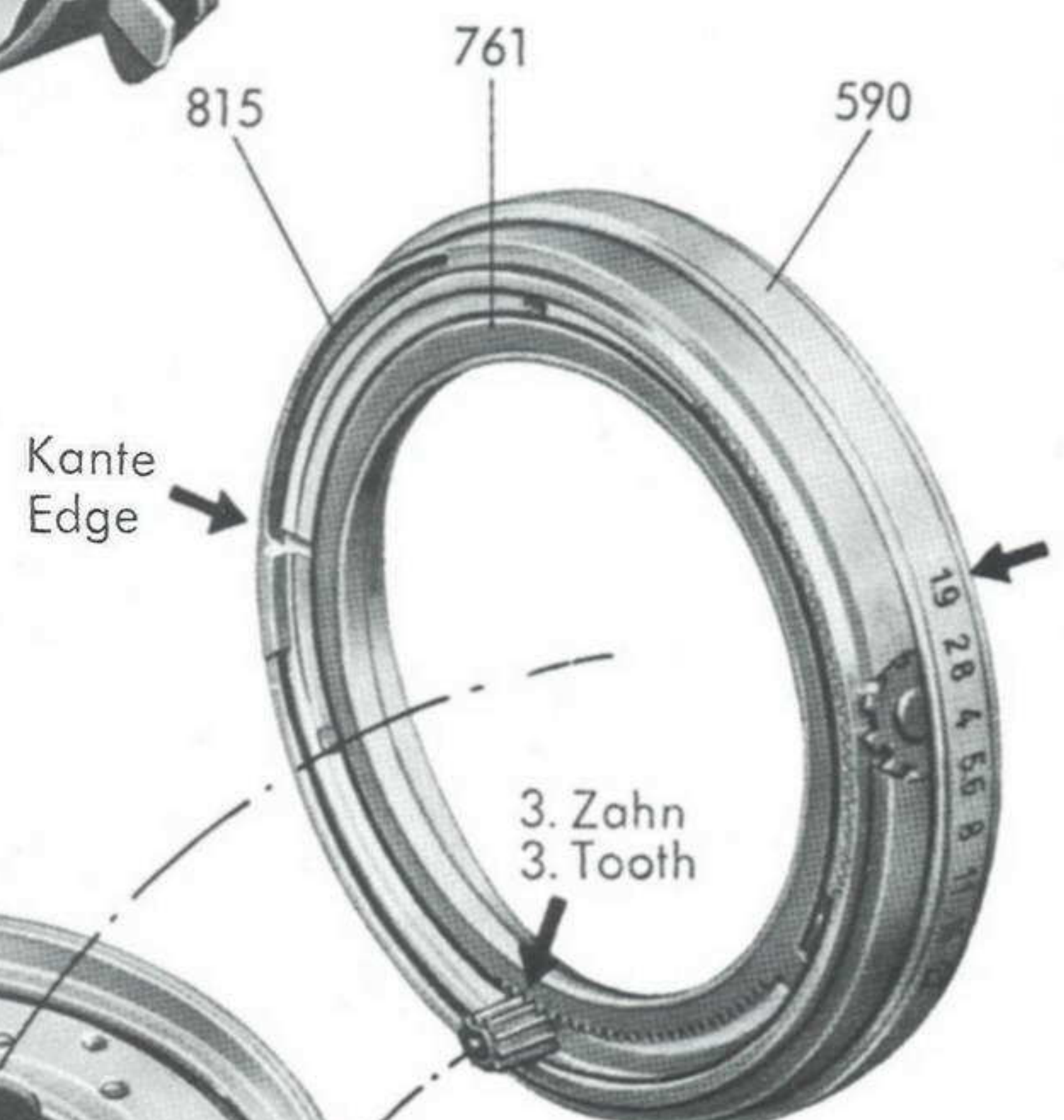
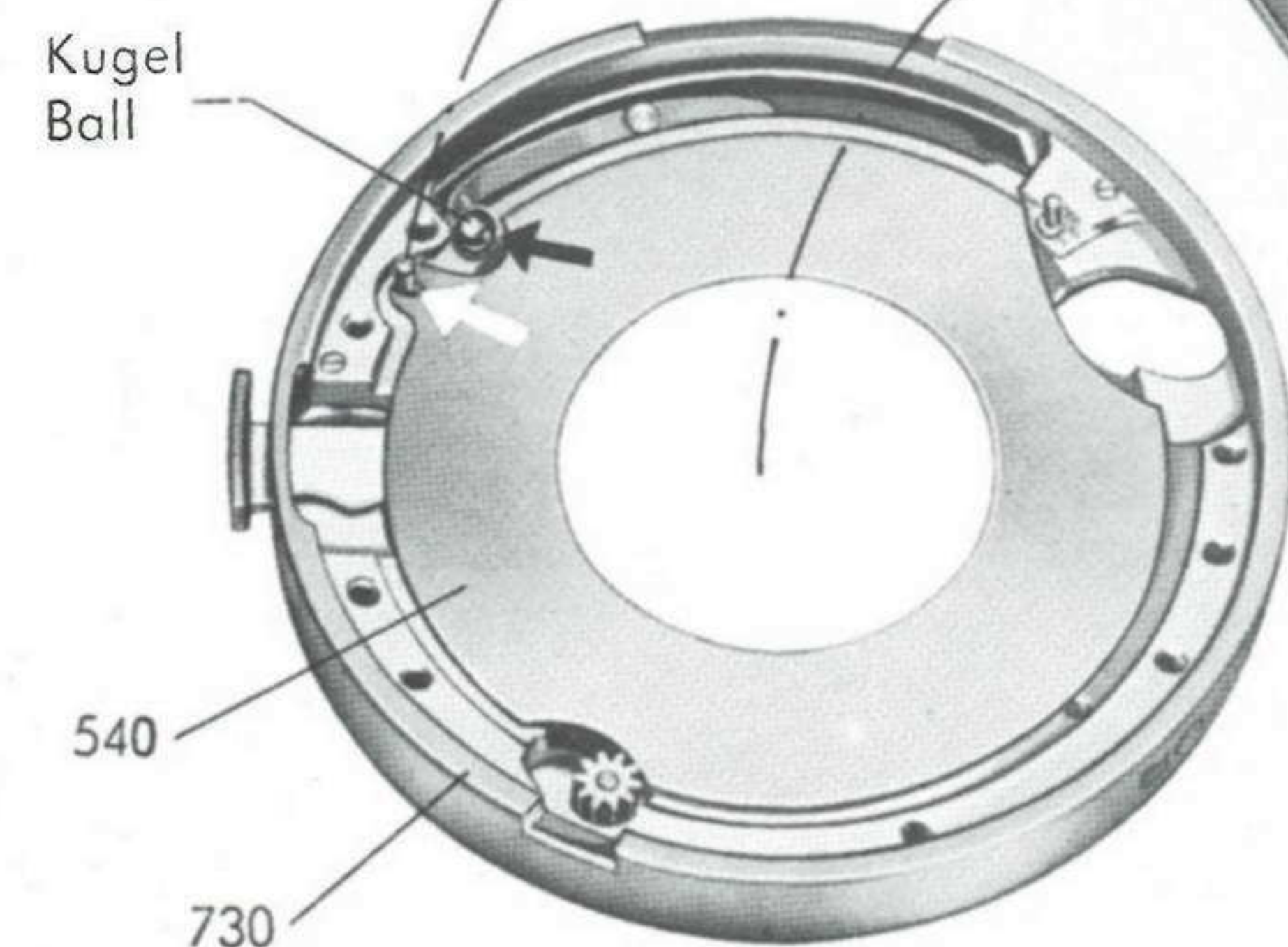
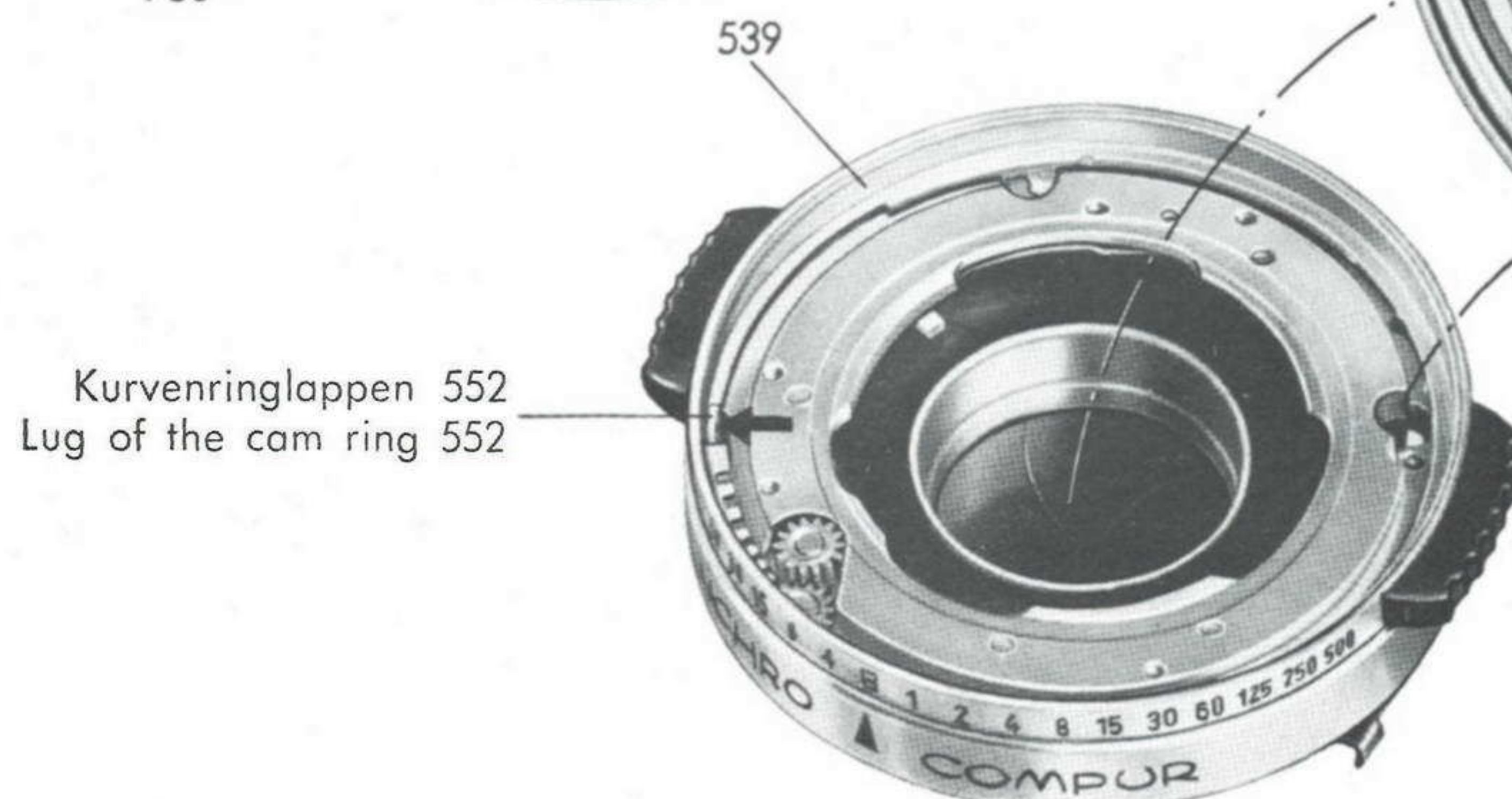


Fig. 4



Kurvenringlappen 552
Lug of the cam ring 552

Kante
Edge

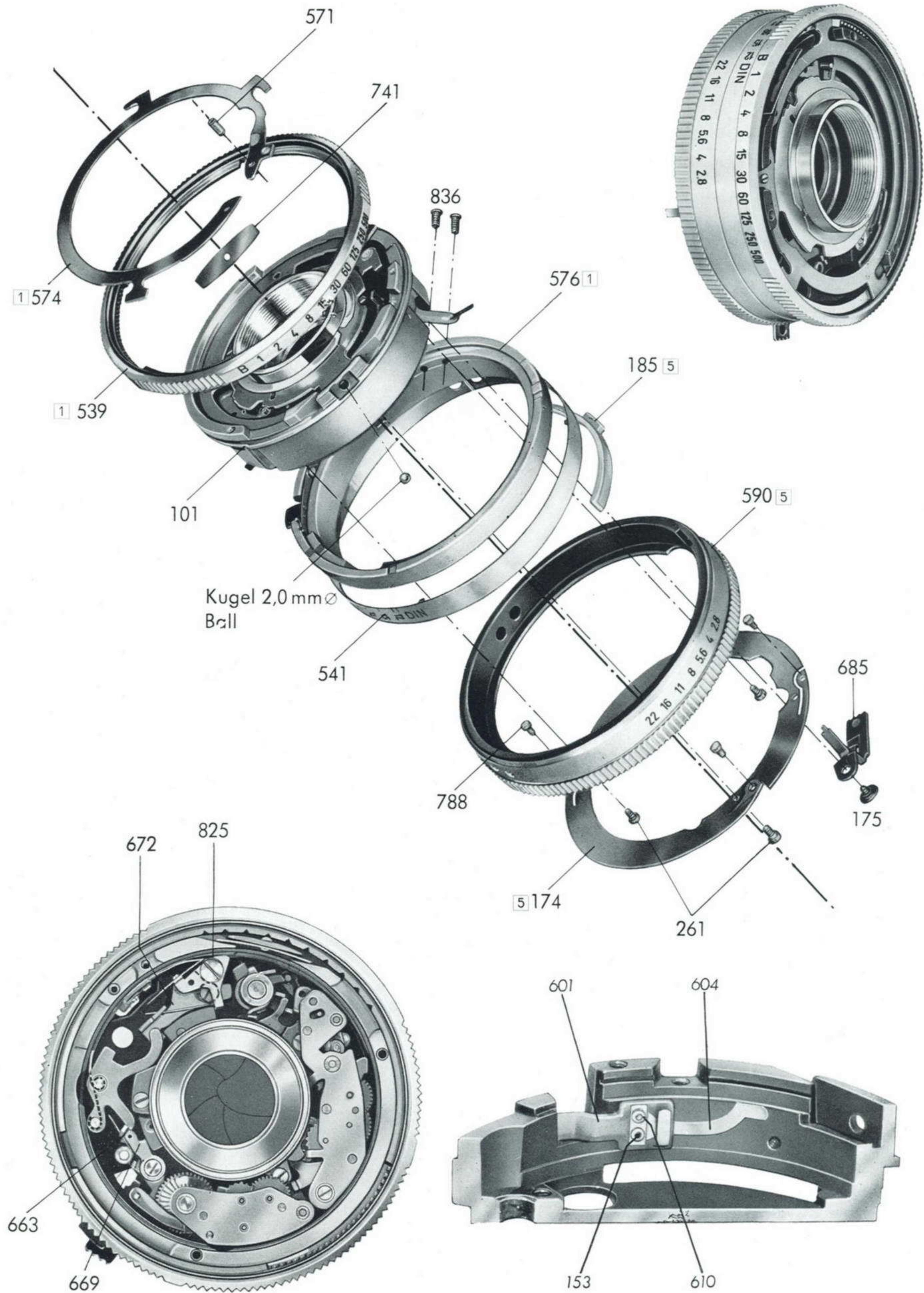
3. Zahn
3. Tooth

COMPUR-WERK MÜNCHEN

COMPUR-RAPID 00-XV

CN-1112-004
Tafel 1
Plate 1

Siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs



COMPUR-WERK MÜNCHEN

COMPUR-RAPID 00-XV*)

Standard ohne Spannring

Standard without tensioning ring

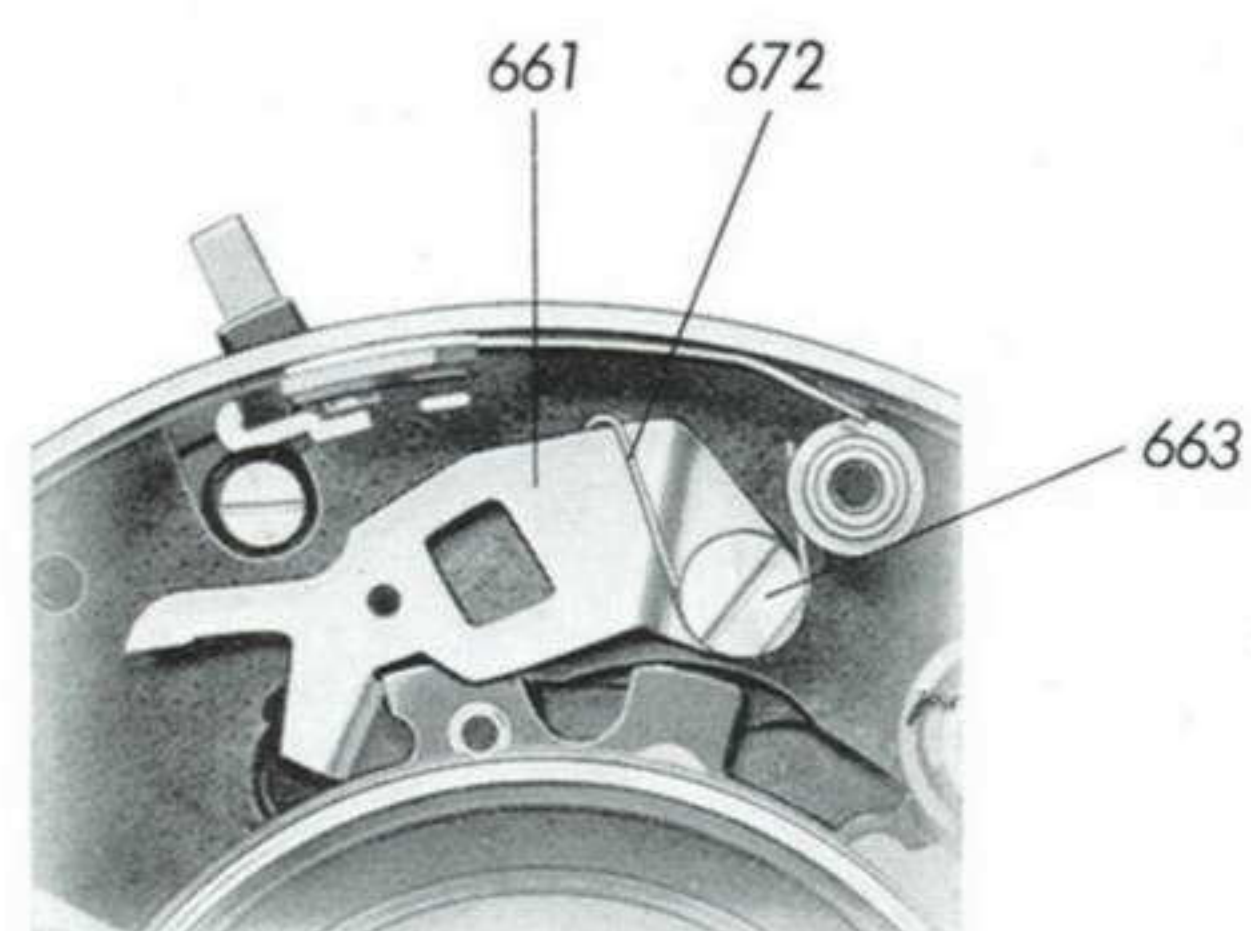
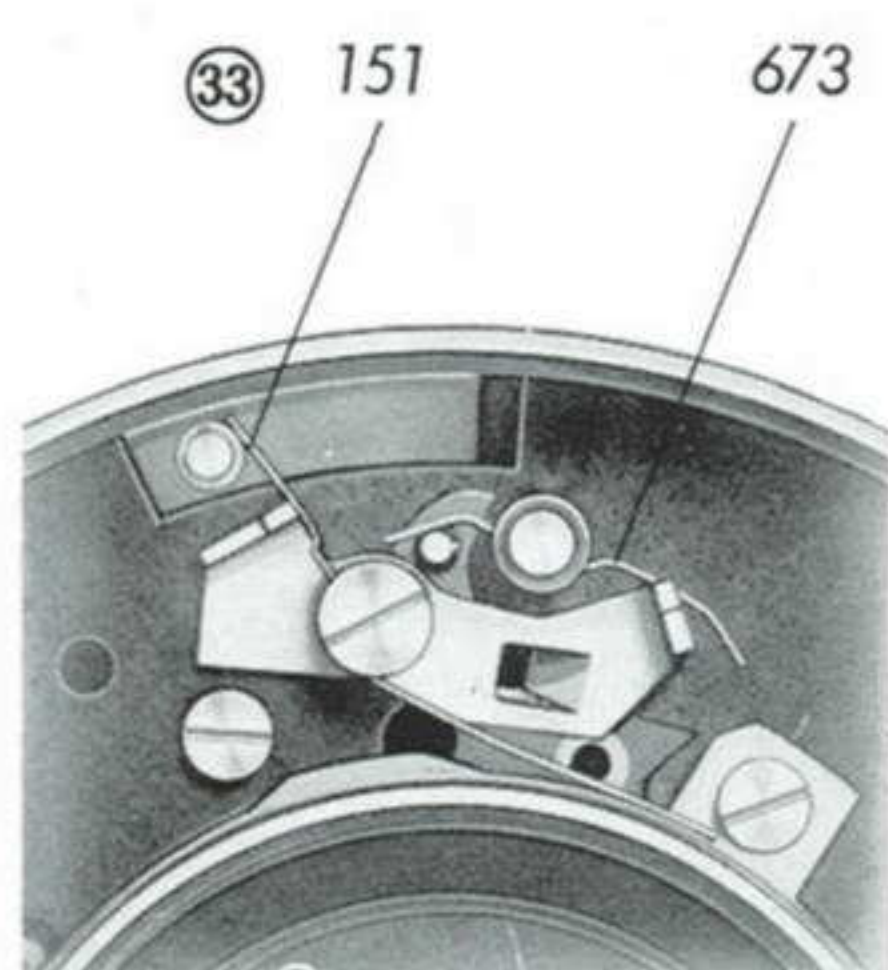
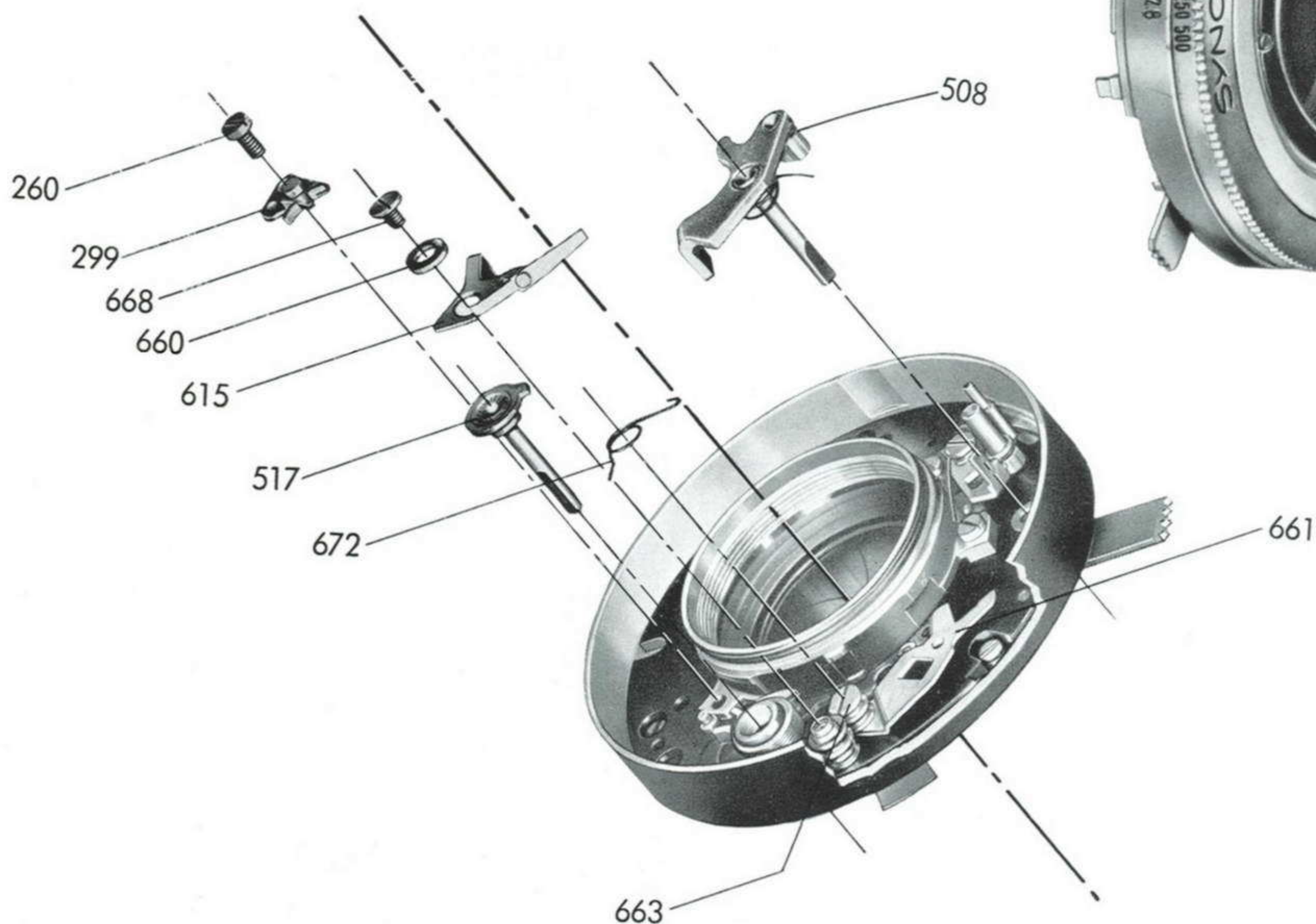
CN-1112-010

Tafel 1

Abbildung der übrigen Teile siehe CN-1110-010 und CN-1110-000
The other parts see CN-1110-010 and CN-1110-000

*) Nebstehende Abbildung: Die Normtypen CN-1112-010 und CN-1110-010 weisen bis auf den Schriftzug COMPUR-RAPID bzw. SYNCHRO-COMPUR die gleichen Außenformen auf

*) Photo on the right: Except for the engravings COMPUR-RAPID or SYNCHRO-COMPUR, the standard shutter, CN-1112-010 and CN-1110-010 have the same shapes.

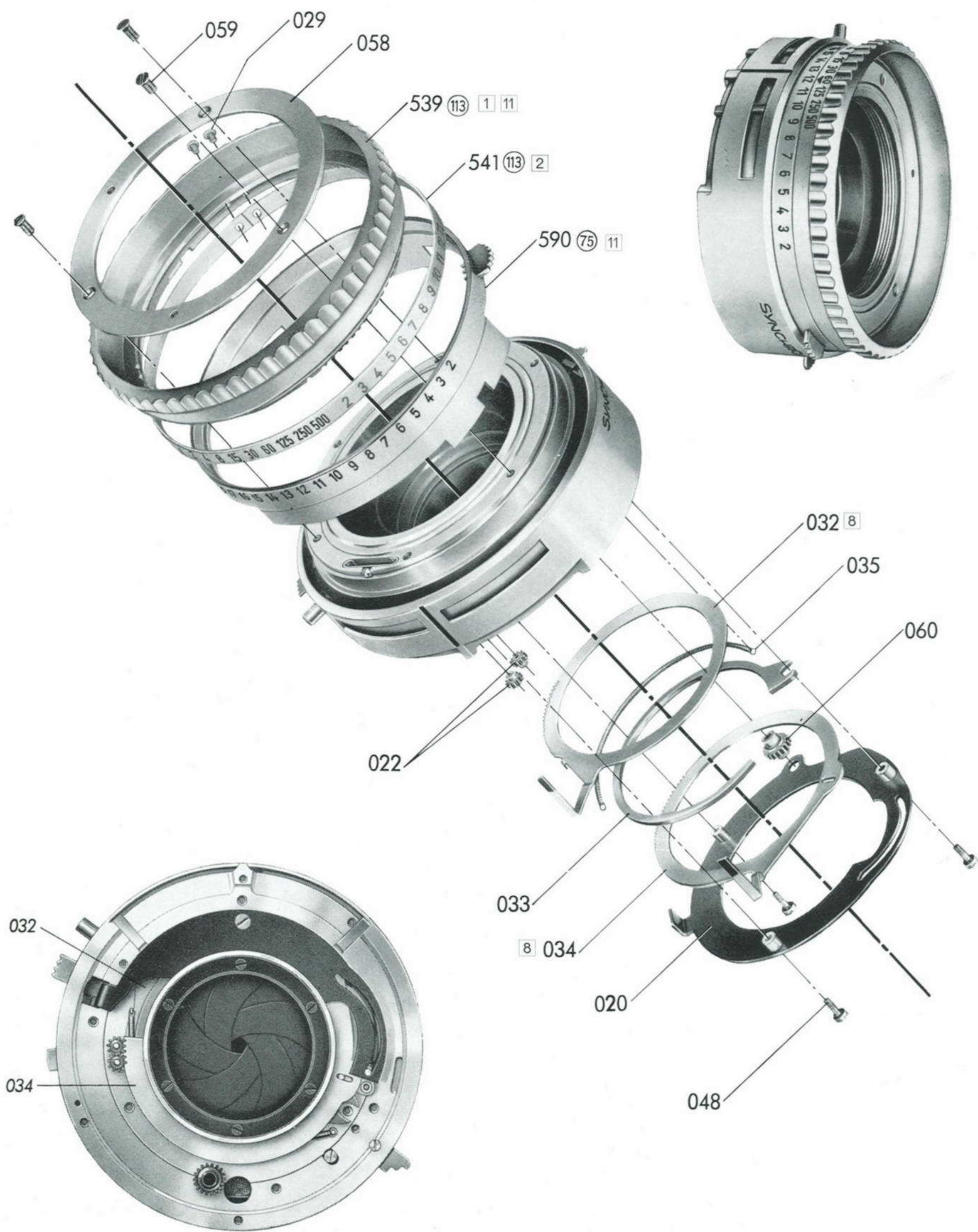


COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MXV
GH-Reflex 103

CN-1210-022
Tafel 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
 Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 0-MXV

GH Reflex 103

CN-1210-022

Tafel 2

Diese Ausführung wurde bis 1965 gefertigt

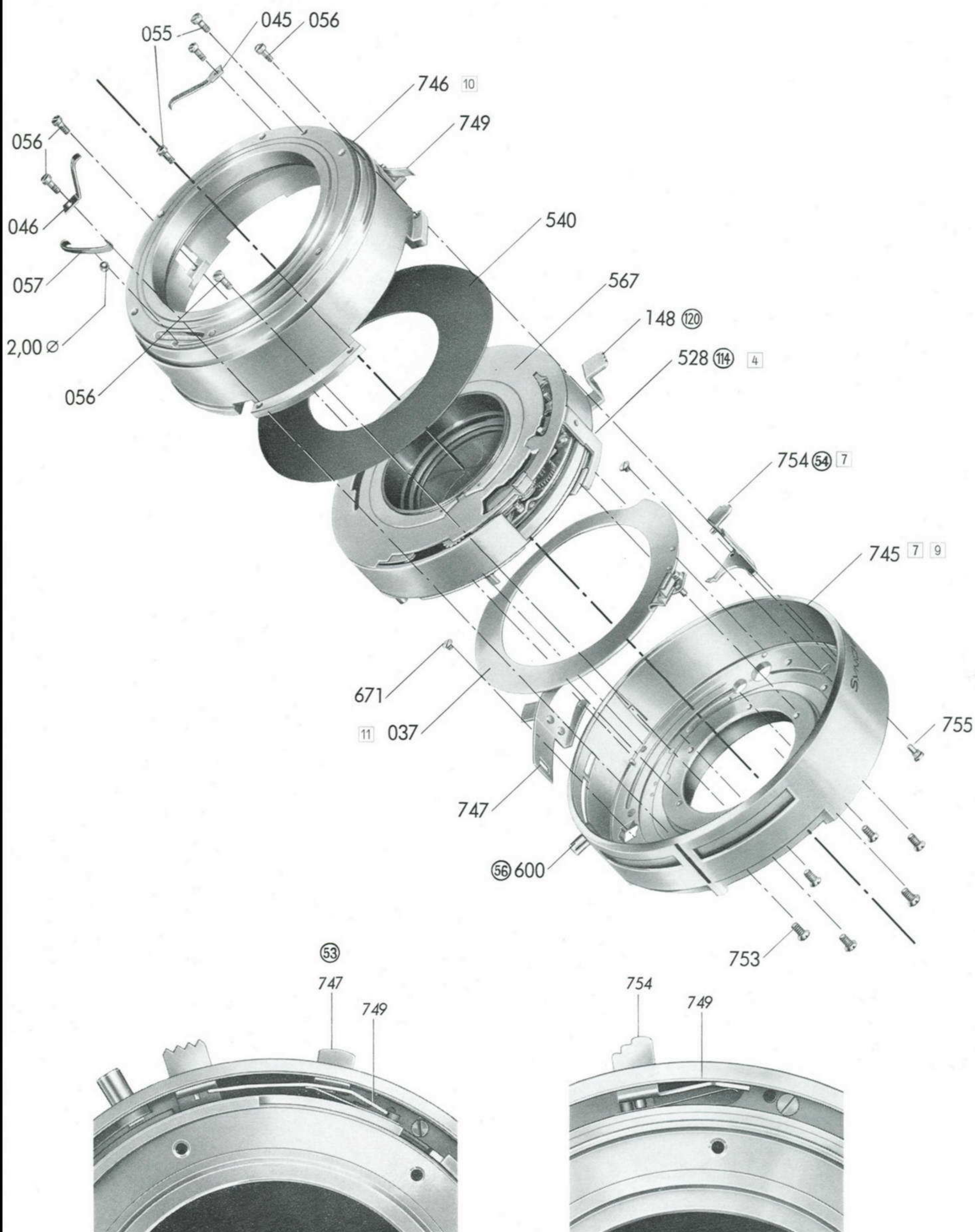
This shutter was manufactured till 1965

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung

Supplement No. ○ See section □ of instructions for repairs

Siehe auch Tafel 2a

See also plate 2a

**COMPUR-WERK MÜNCHEN**

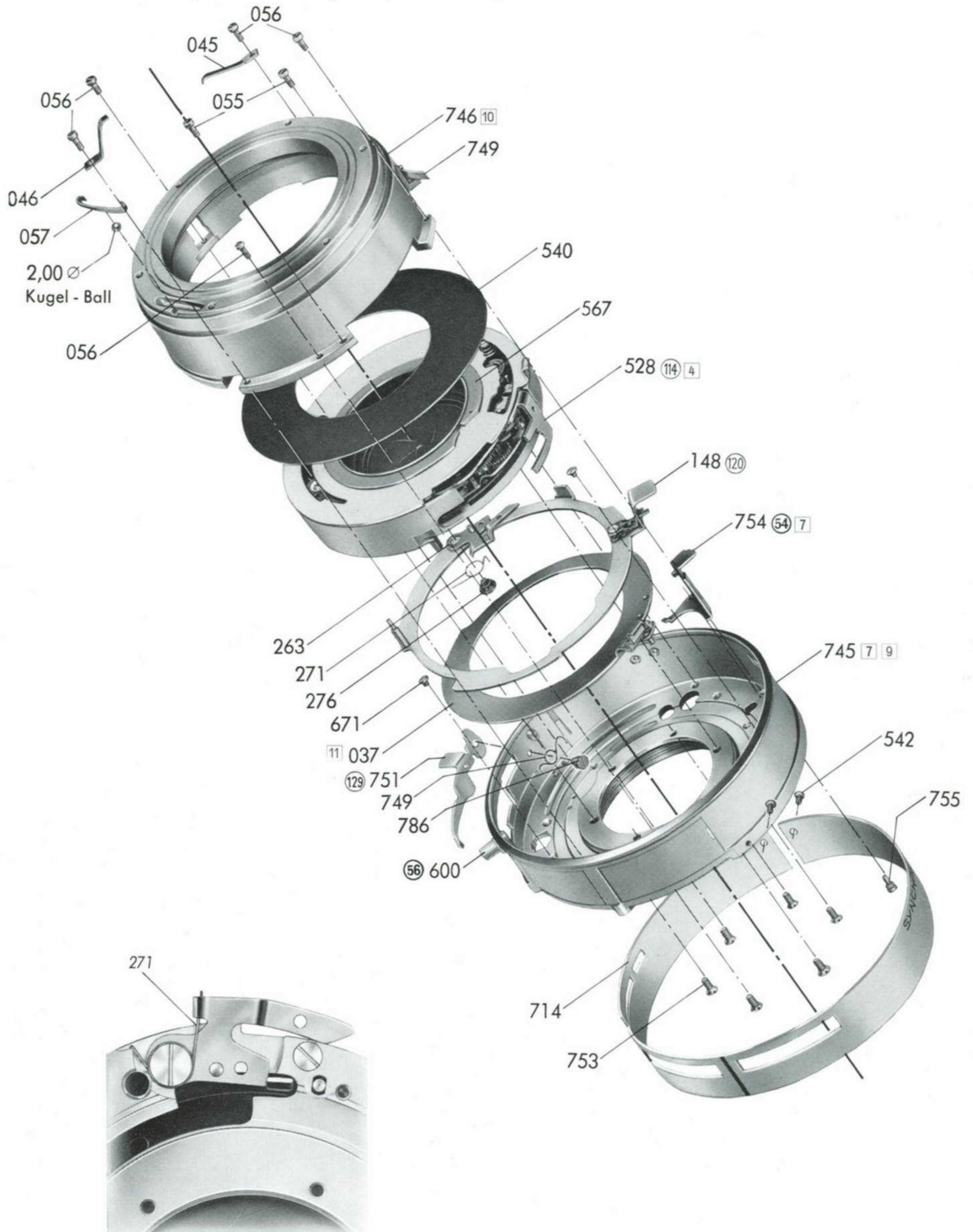
SYNCHRO-COMPUR 0-MXV **GH-Reflex 103**

CN-1210-022
Tafel 2a

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung

Supplement No. ○ See section □ of instructions for repairs

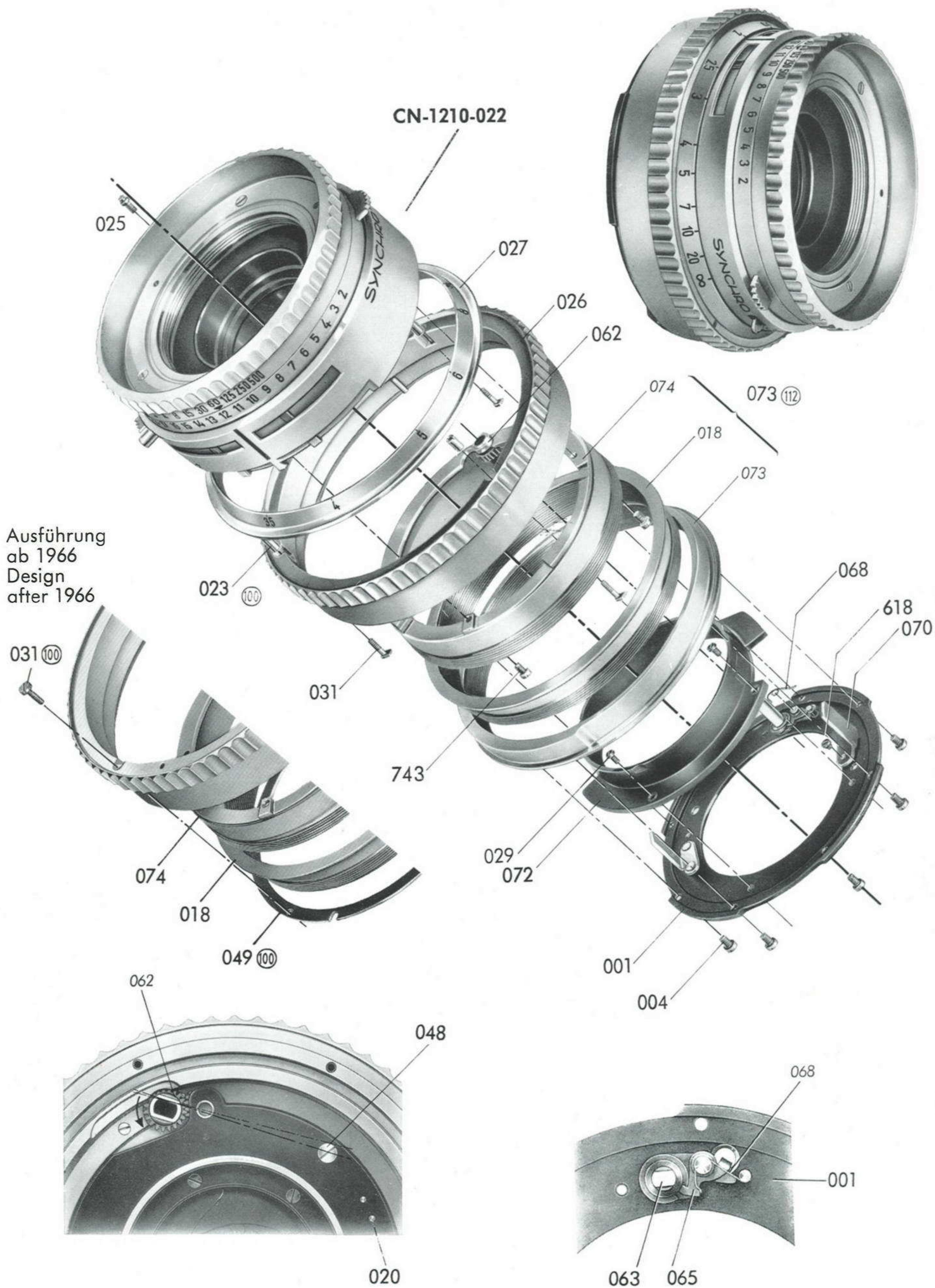
Diese Ausführung wird seit 1965 gefertigt - This design has been manufactured since 1965



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MXV
GH-Reflex-Wechsel 107

CN-1210-040
Tafel 1



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MXV
GH-Reflex-Wechsel 107

CN-1210-040
Tafel 2

Fig. 1 1 Dargestellt ist die frühere Ausführung (bis 1965) ohne Klemmring 049
Shown is the former design (till 1965) without clamp ring 049

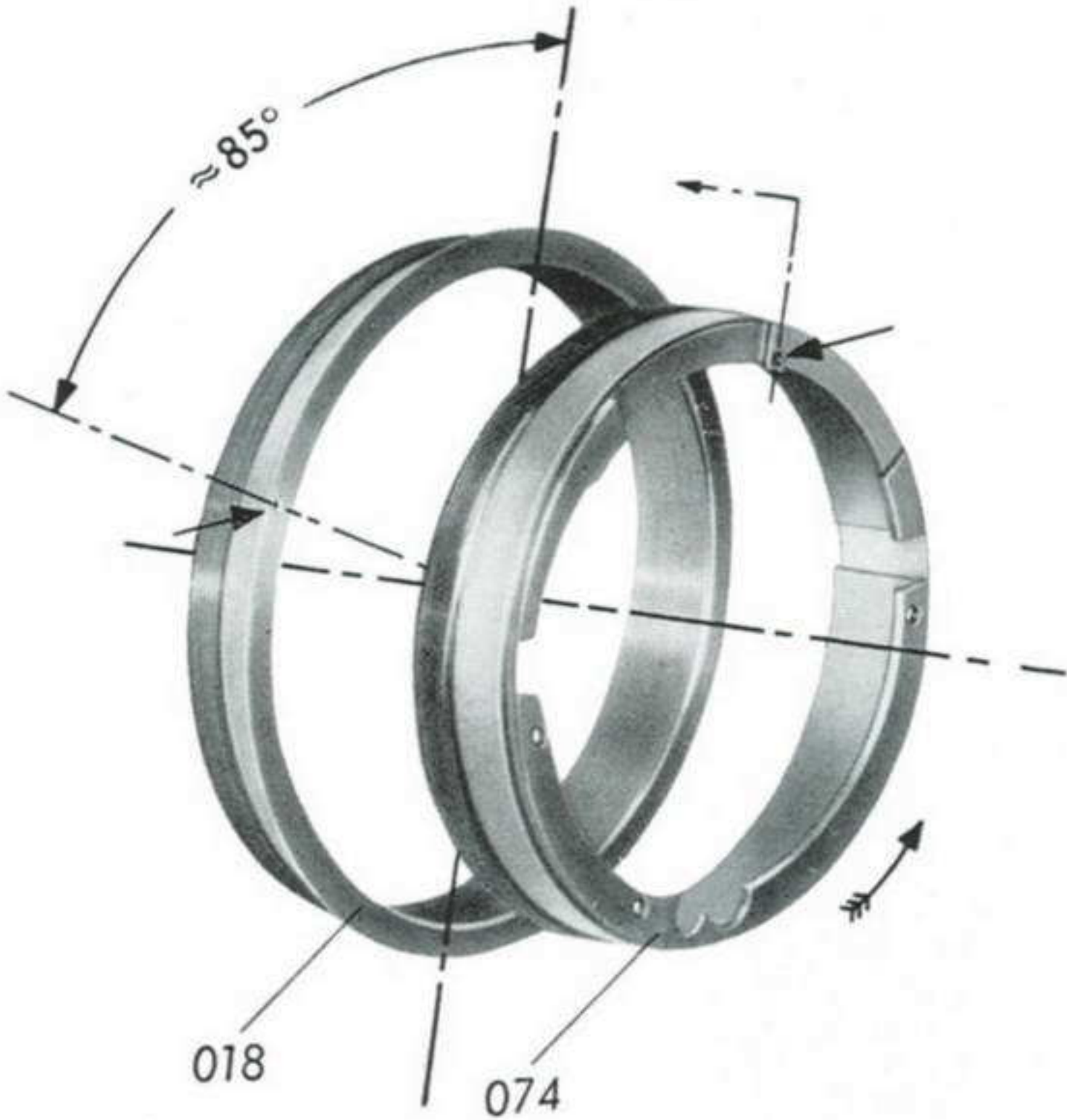


Fig. 2 1



Fig. 3 1 Ring gewendet
Ring Turned

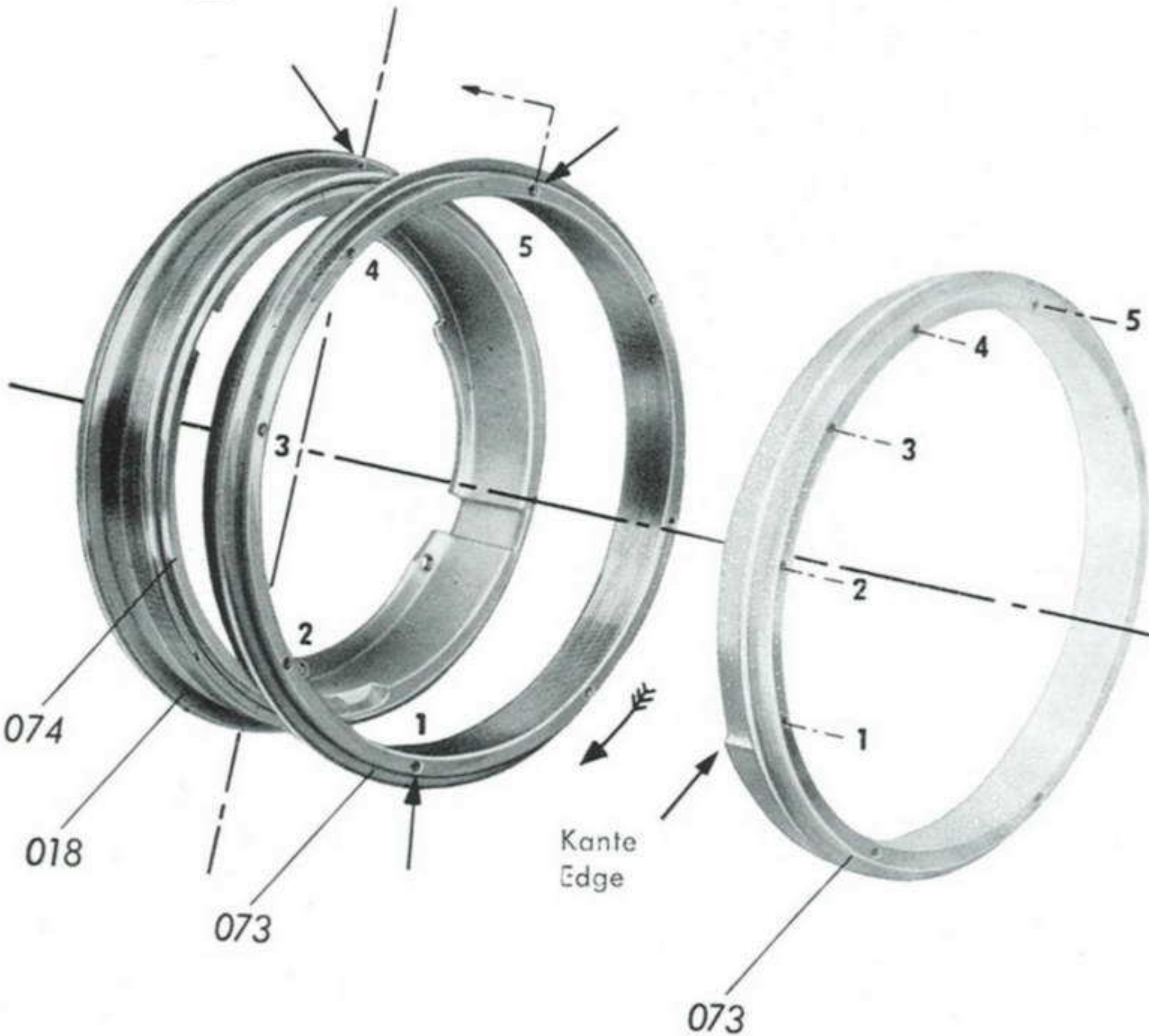


Fig. 4 5



Fig. 5 1 5

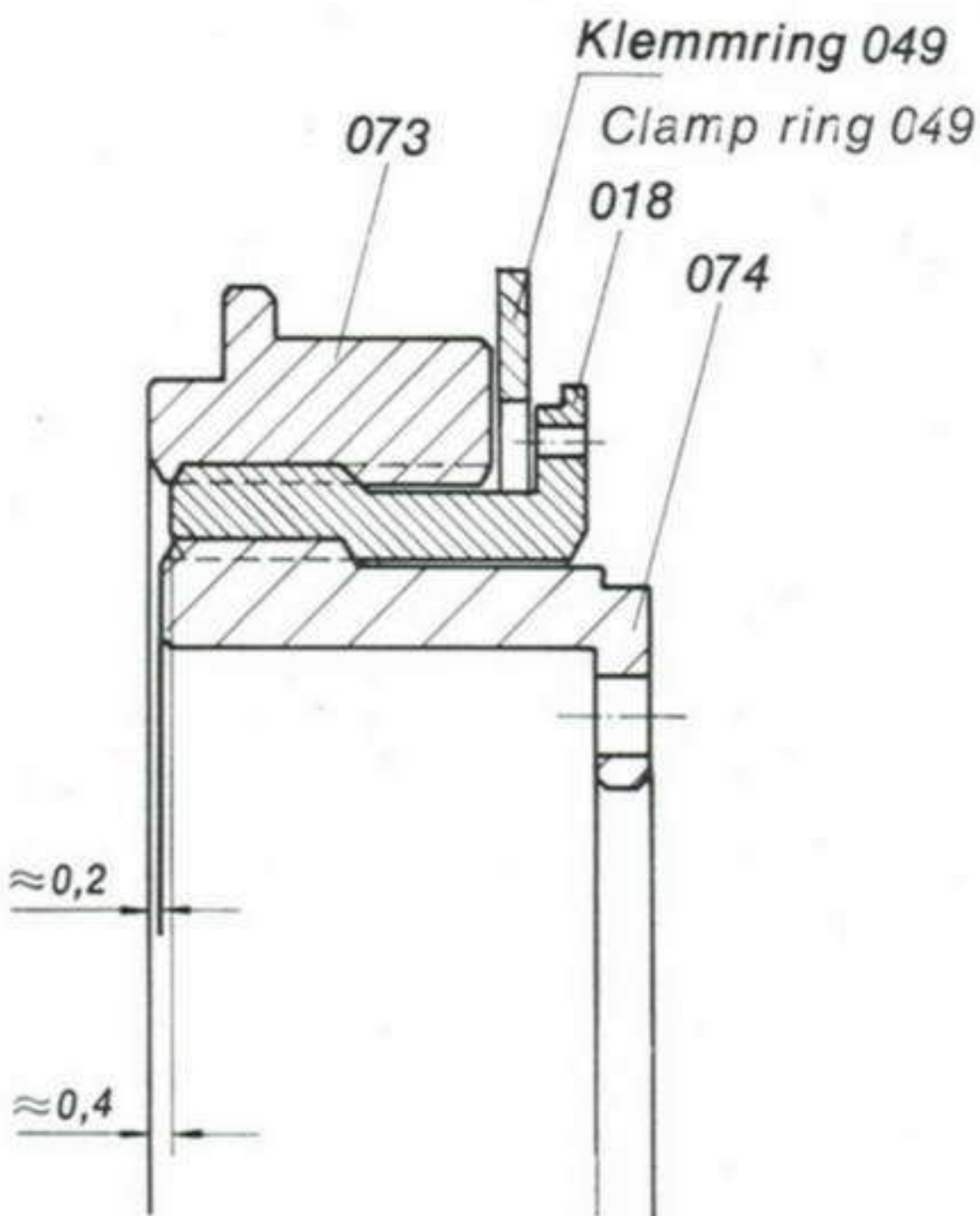
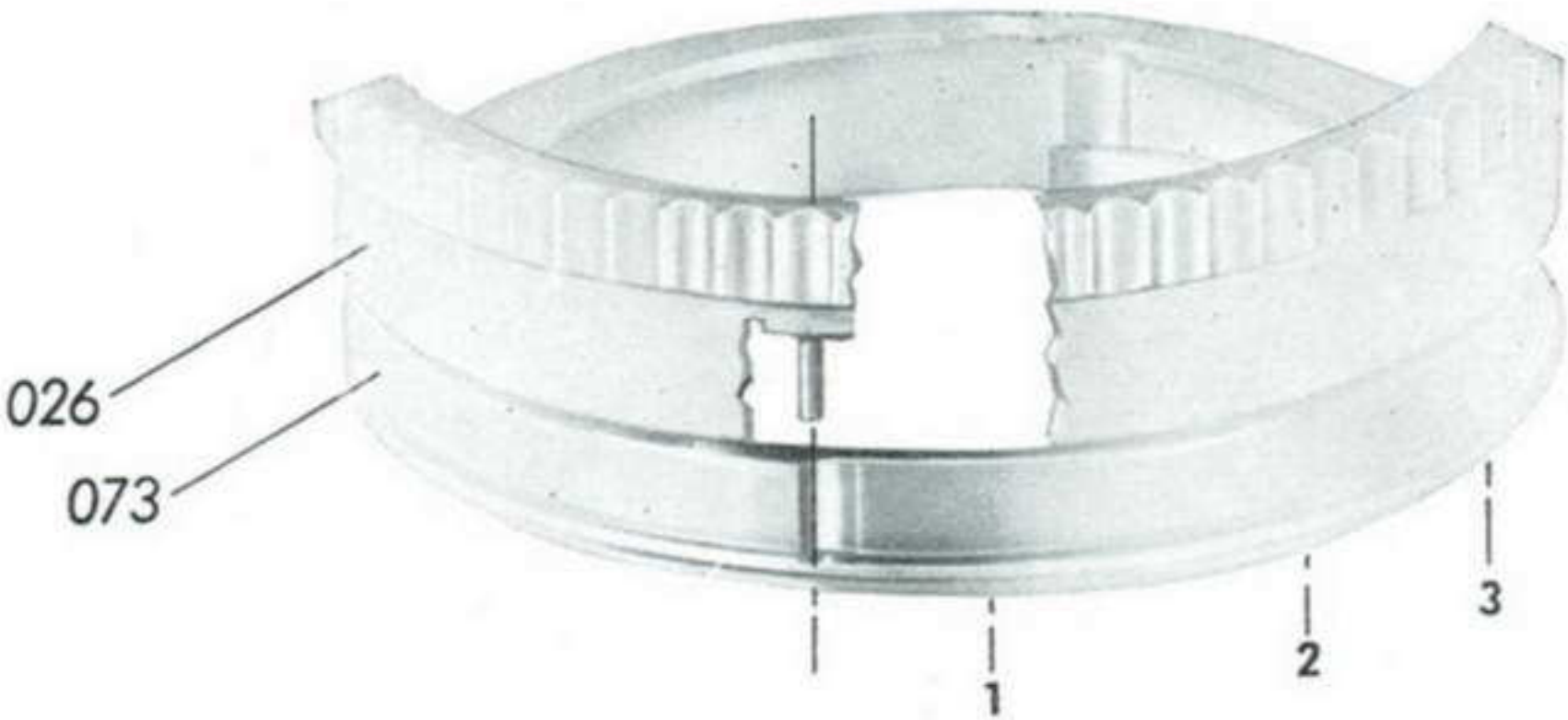


Fig. 6 13



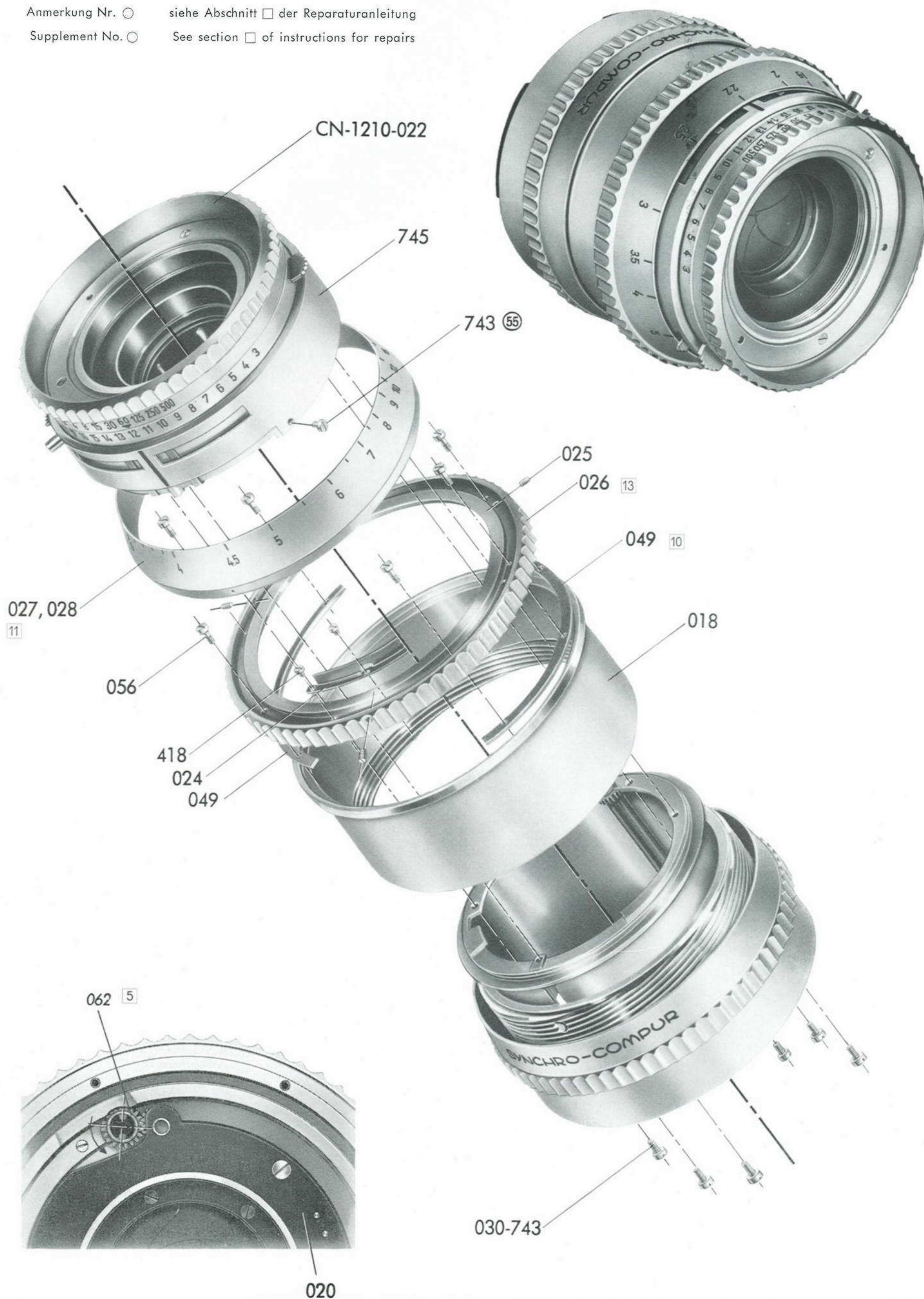
Siehe Abschnitt 1 der Reparaturanleitung
See section 1 of instructions for repairs

SYNCHRO-COMPUR 0-MXV

GH-Reflex-Wechsel 107

CN-1210-041
Tafel 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



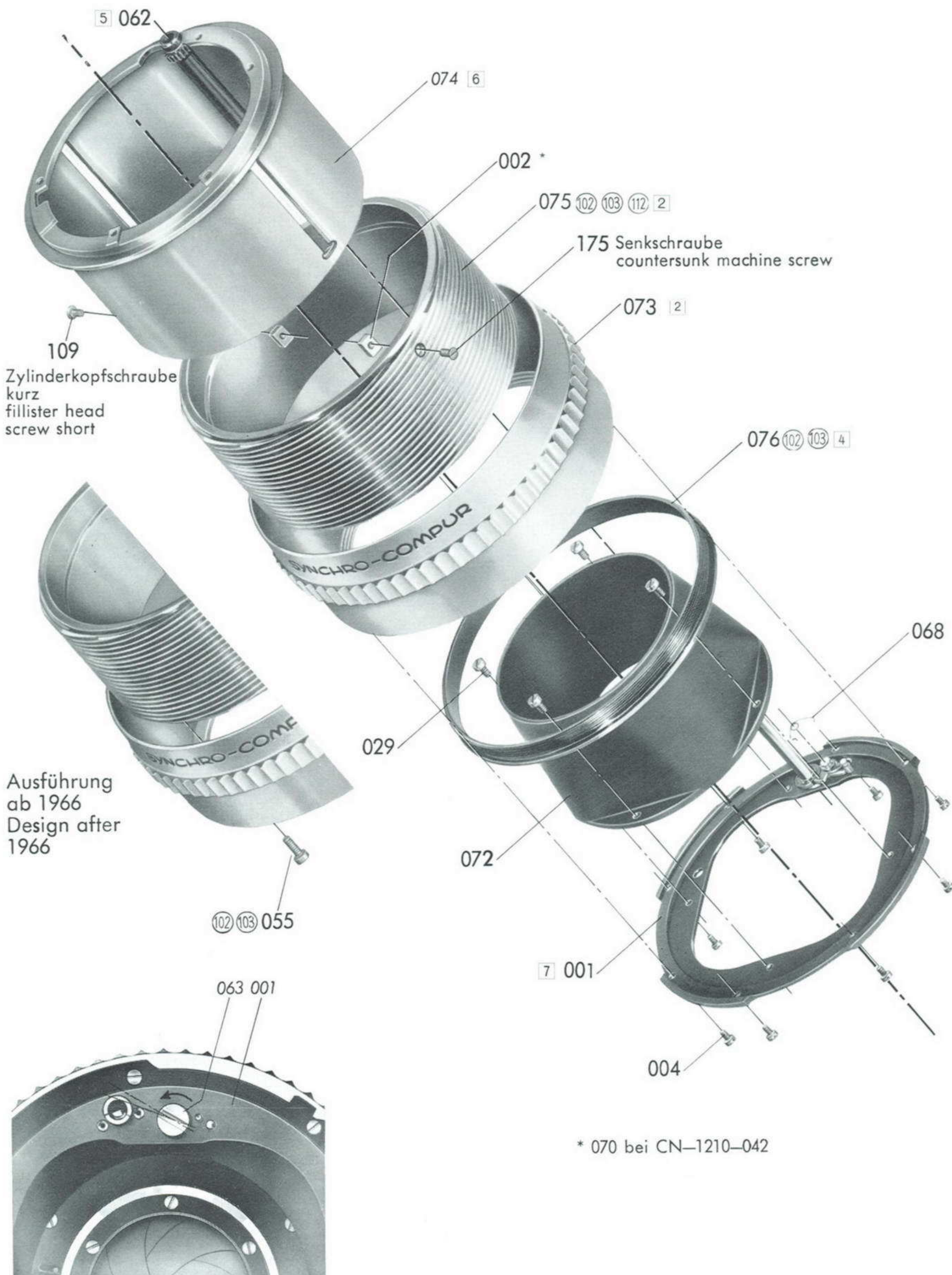
COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MXV **GH-Reflex-Wechsel 107**

CN-1210-041
 Tafel 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung

Supplement No. ○ See section □ of instructions for repairs

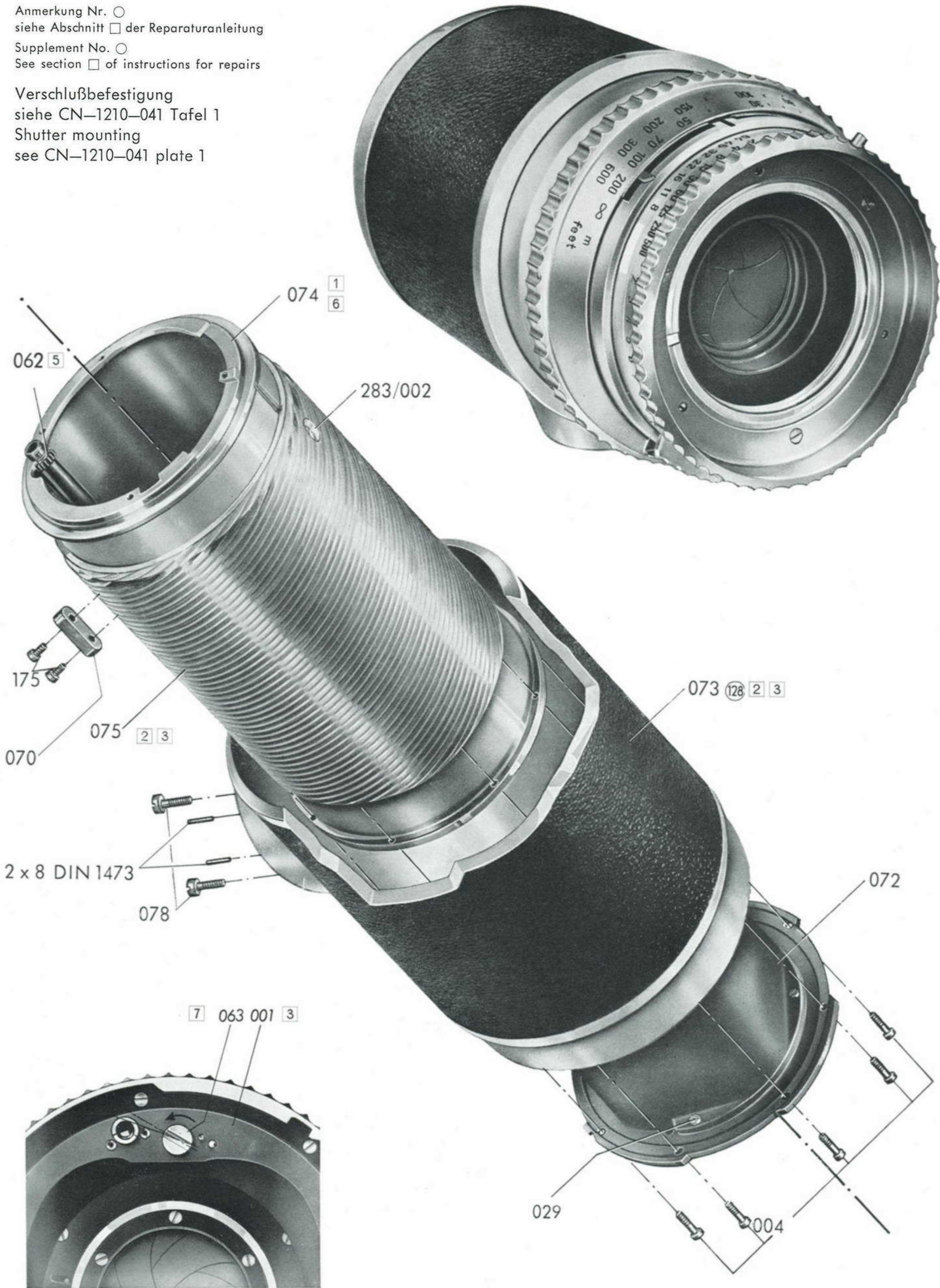


SYNCHRO-COMPUR O-MXV
GH-Reflex-Wechsel f:500

CN-1210-047
Tafel 1

Anmerkung Nr. ○
siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○
See section □ of instructions for repairs

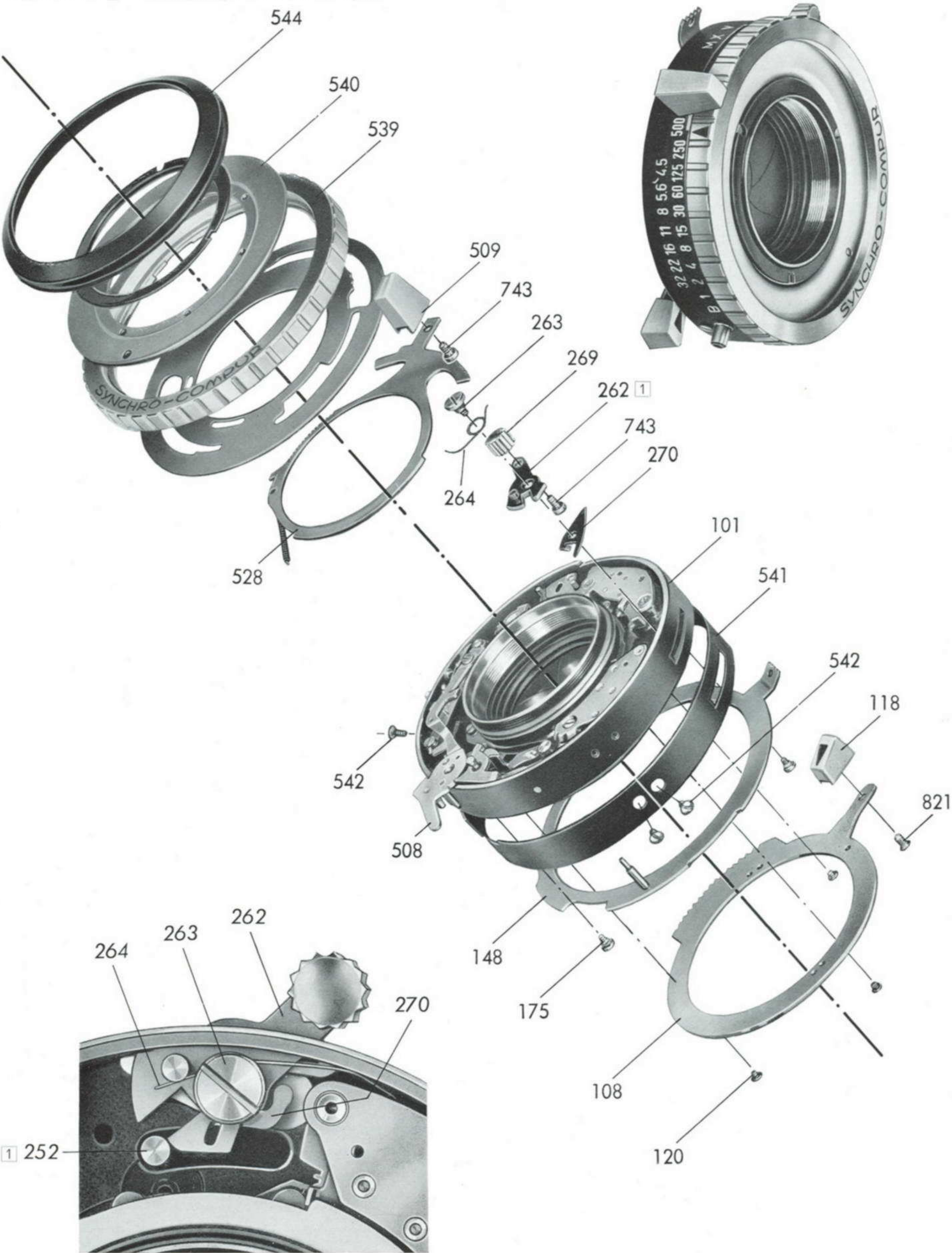
Verschlussbefestigung
siehe CN-1210-041 Tafel 1
Shutter mounting
see CN-1210-041 plate 1



SYNCHRO-COMPUR 0-MXV
mit Sektorenöffnungseinrichtung
with blade-opening mechanism

CN-1210-051
Tafel 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 1-MX

CN-1307-000

Tafel 1

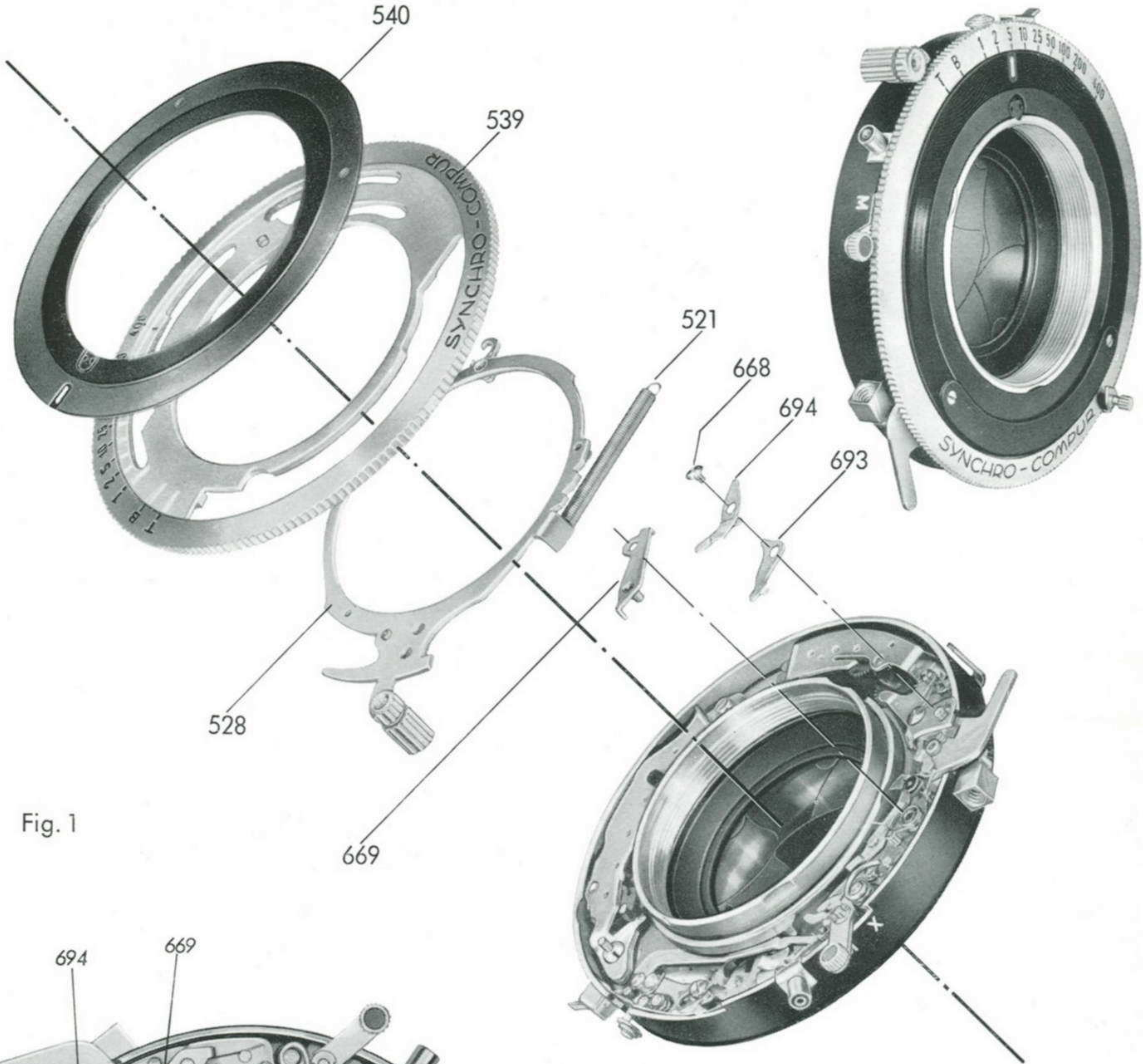


Fig. 1

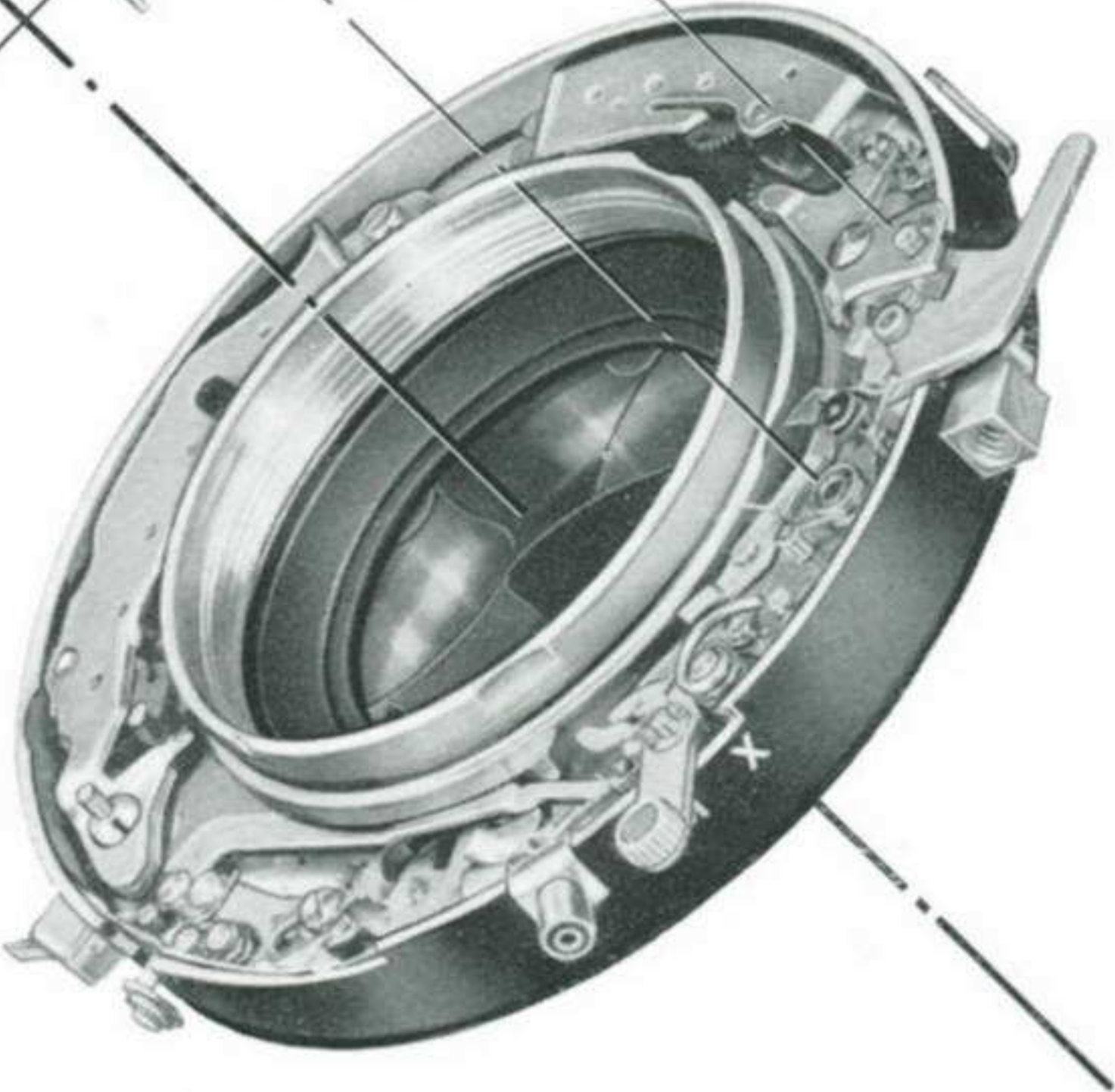
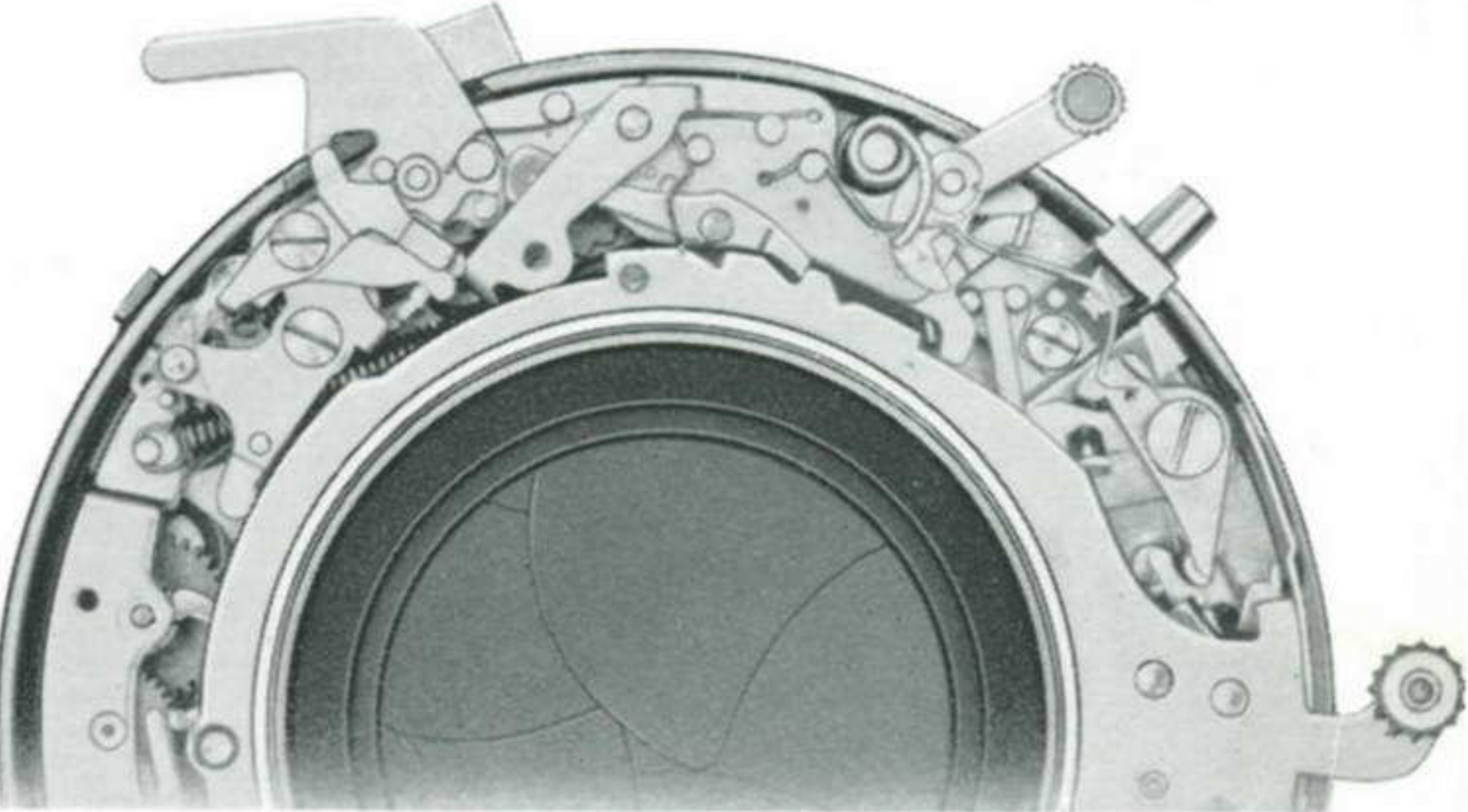
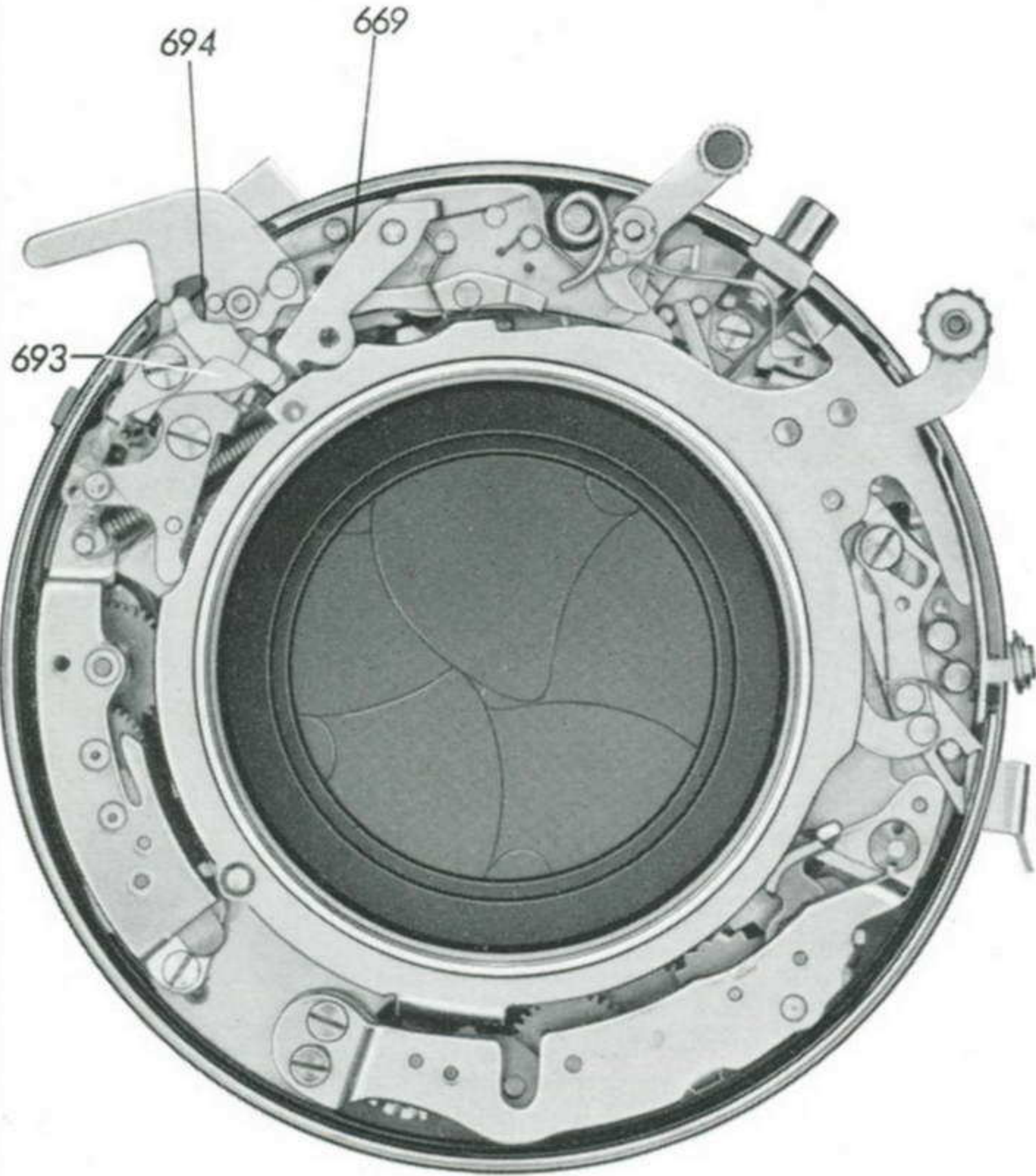


Fig. 2

Verschluß gespannt
shutter tensioned



SYNCHRO-COMPUR 1-MX

CN-1307-000
Tafel 2

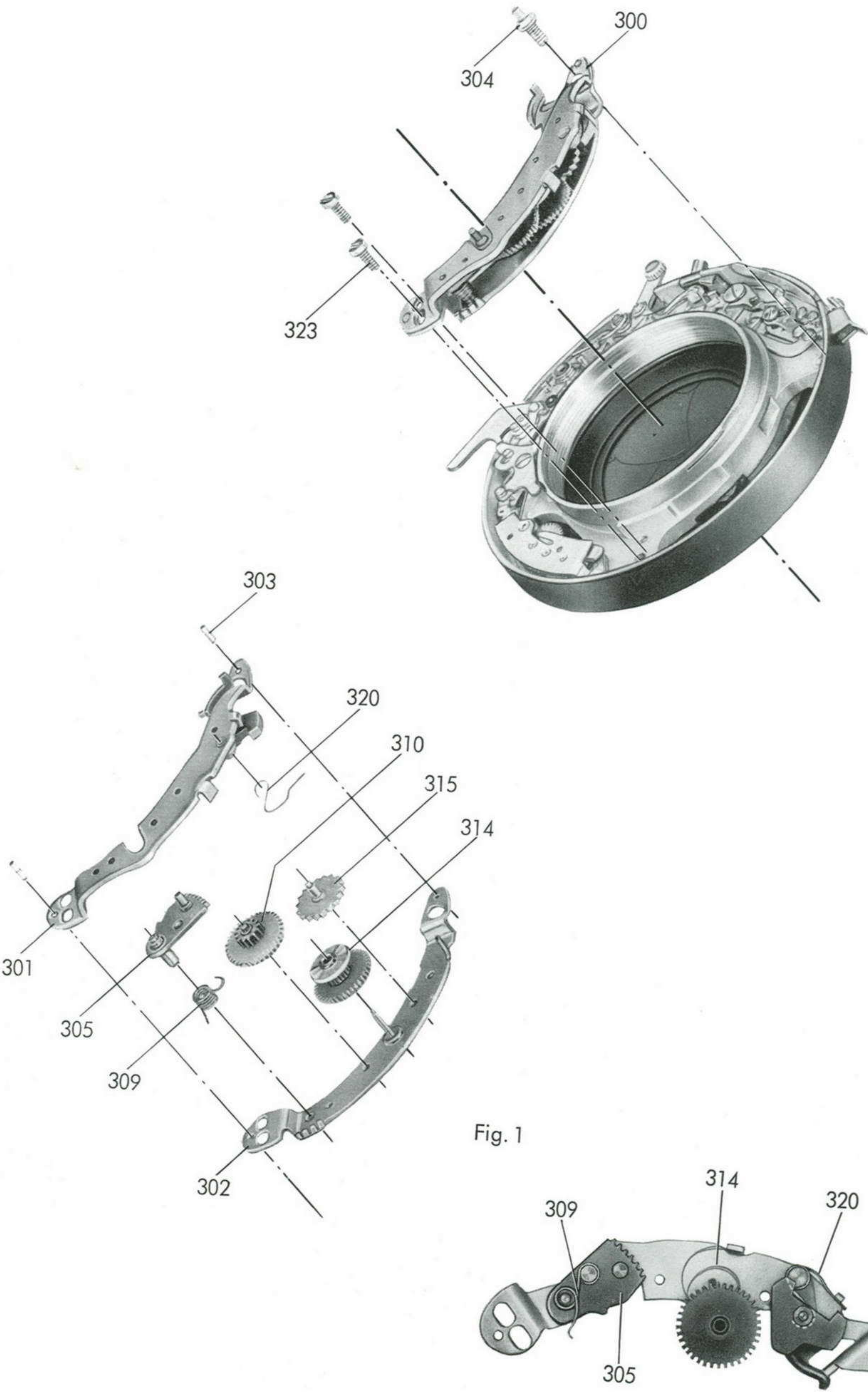
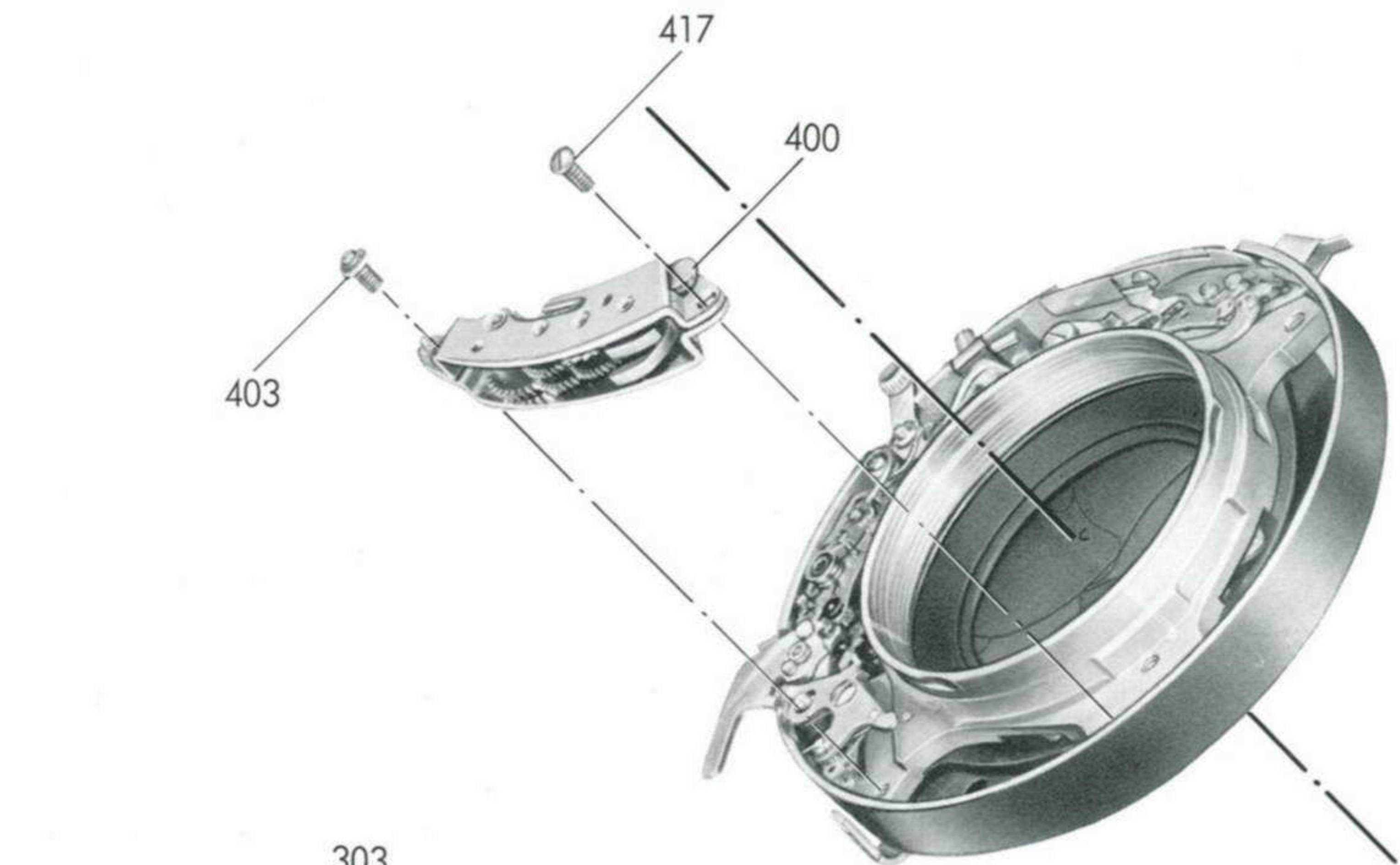


Fig. 1

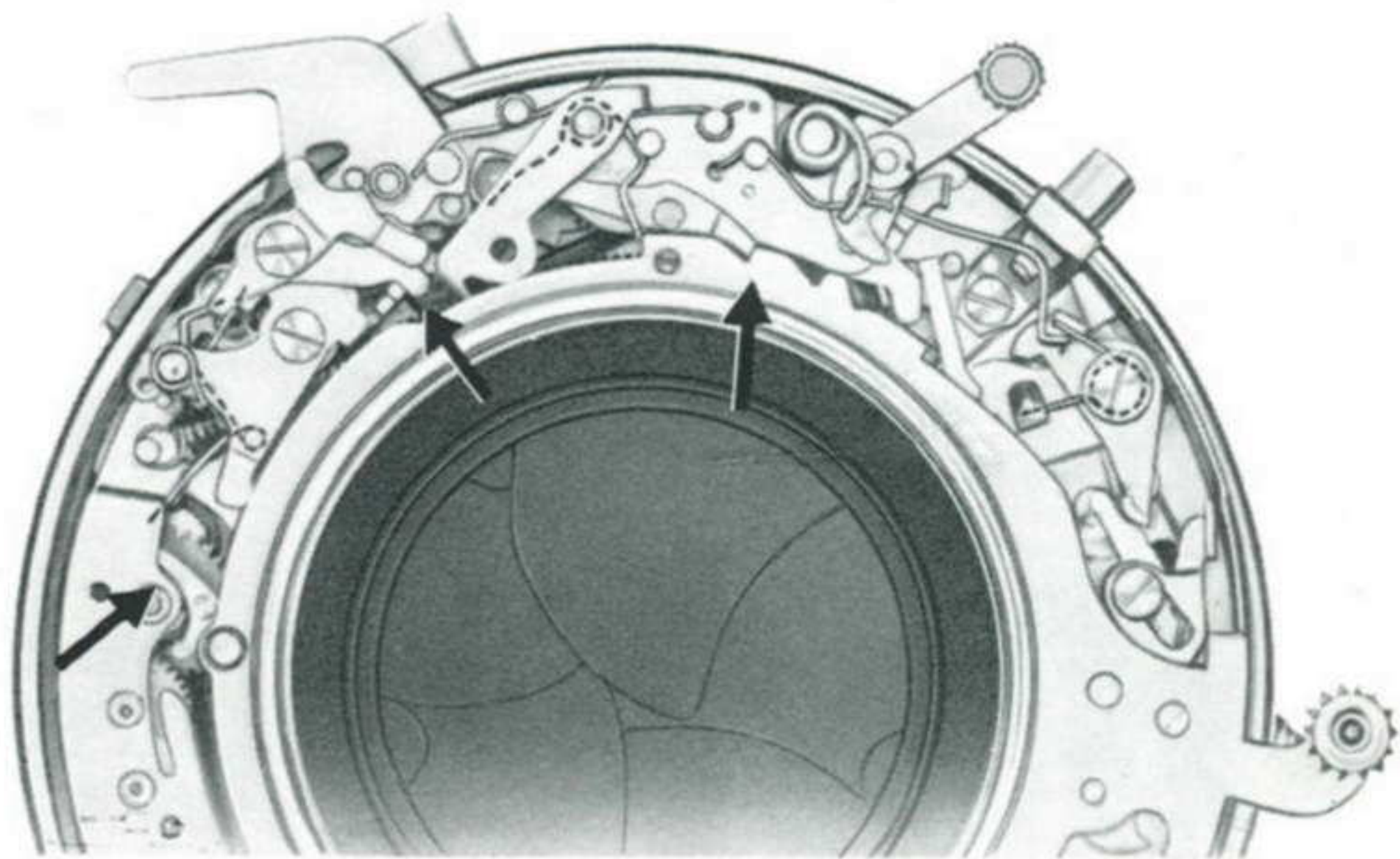
SYNCHRO-COMPUR 1-MX

CN-1307-000

Tafel 3



Verschluß und
Vorlaufwerk gespannt
Shutter and delayed-action
mechanism tensioned



SYNCHRO-COMPUR 1-MX

CN-1307-000
Tafel 4

Fig. 1

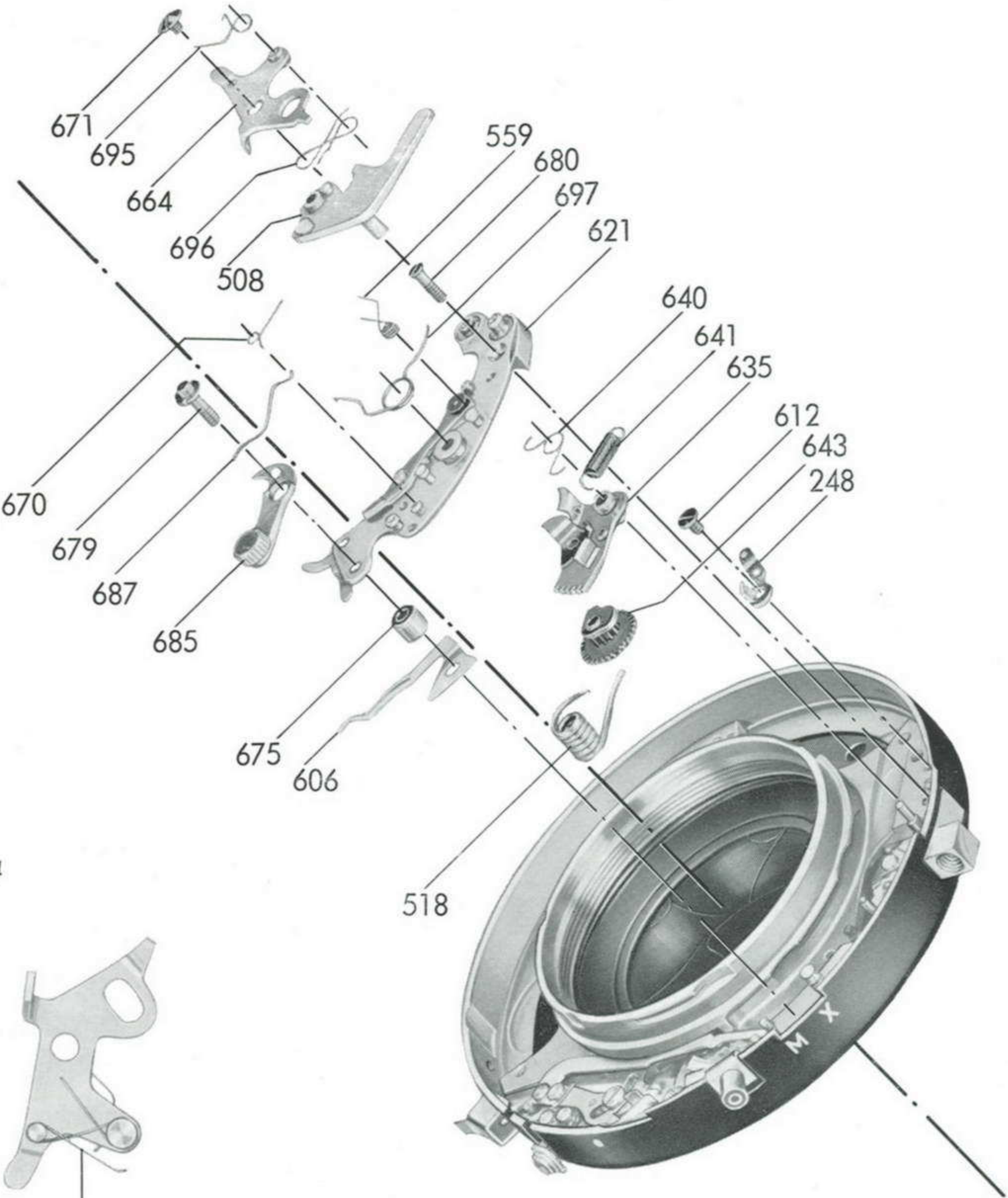


Fig. 2

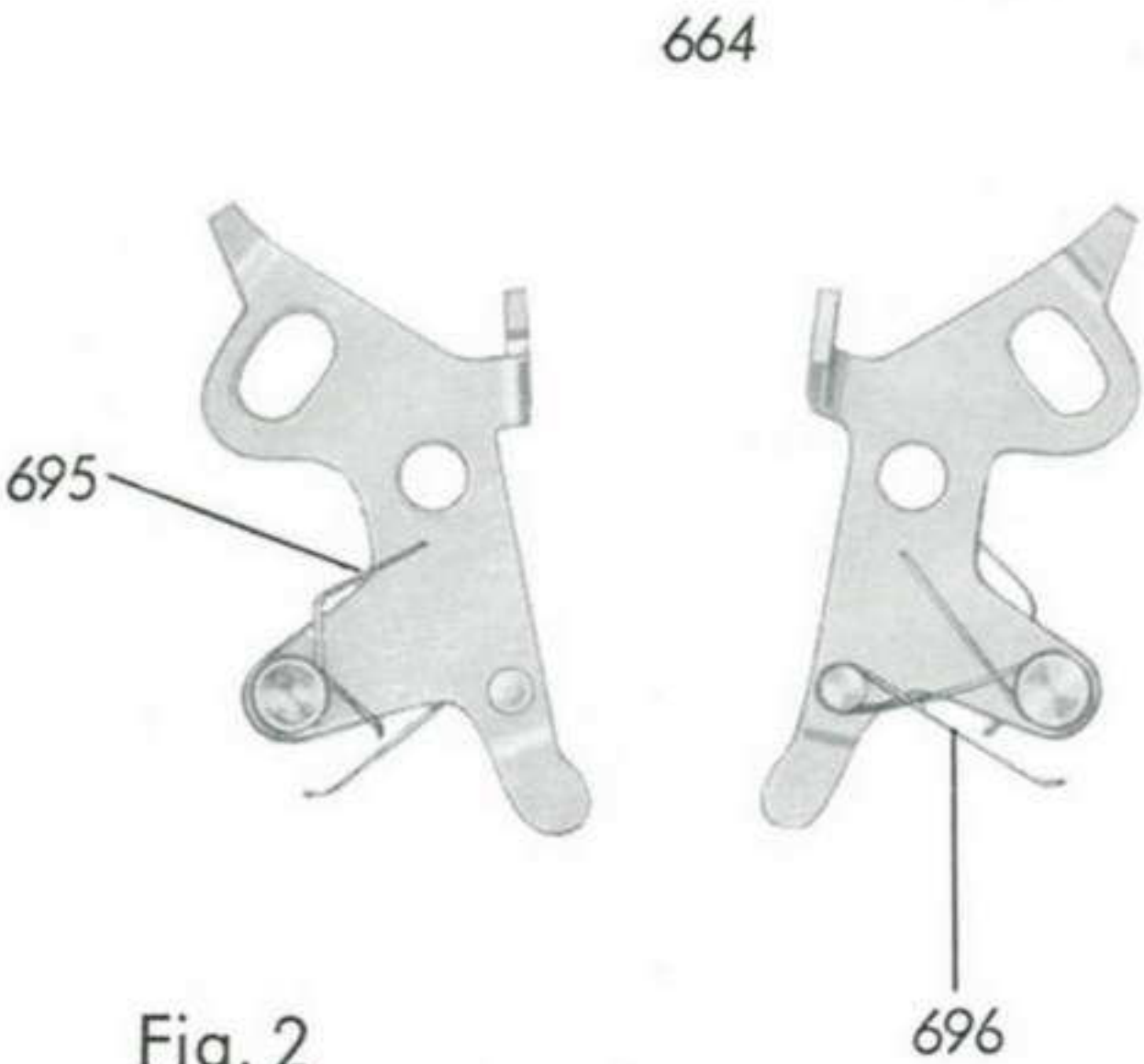
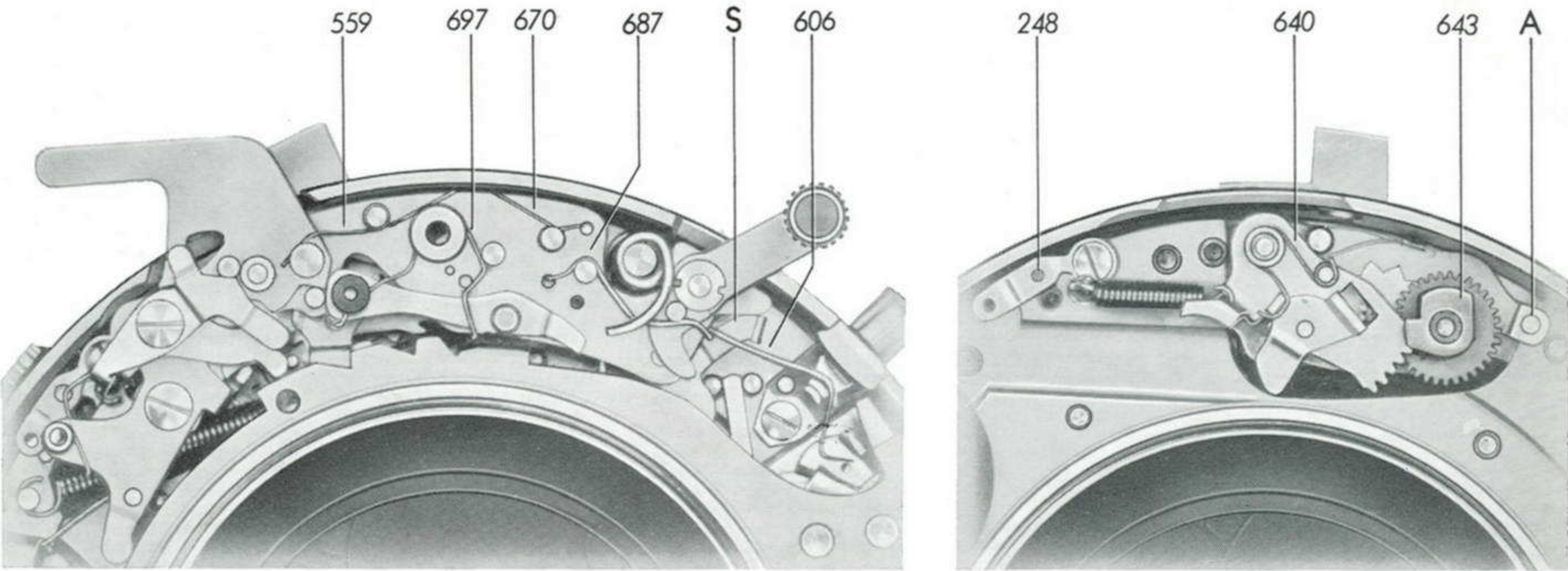


Fig. 3



SYNCHRO-COMPUR 1-MX

CN-1307-000
Tafel 5

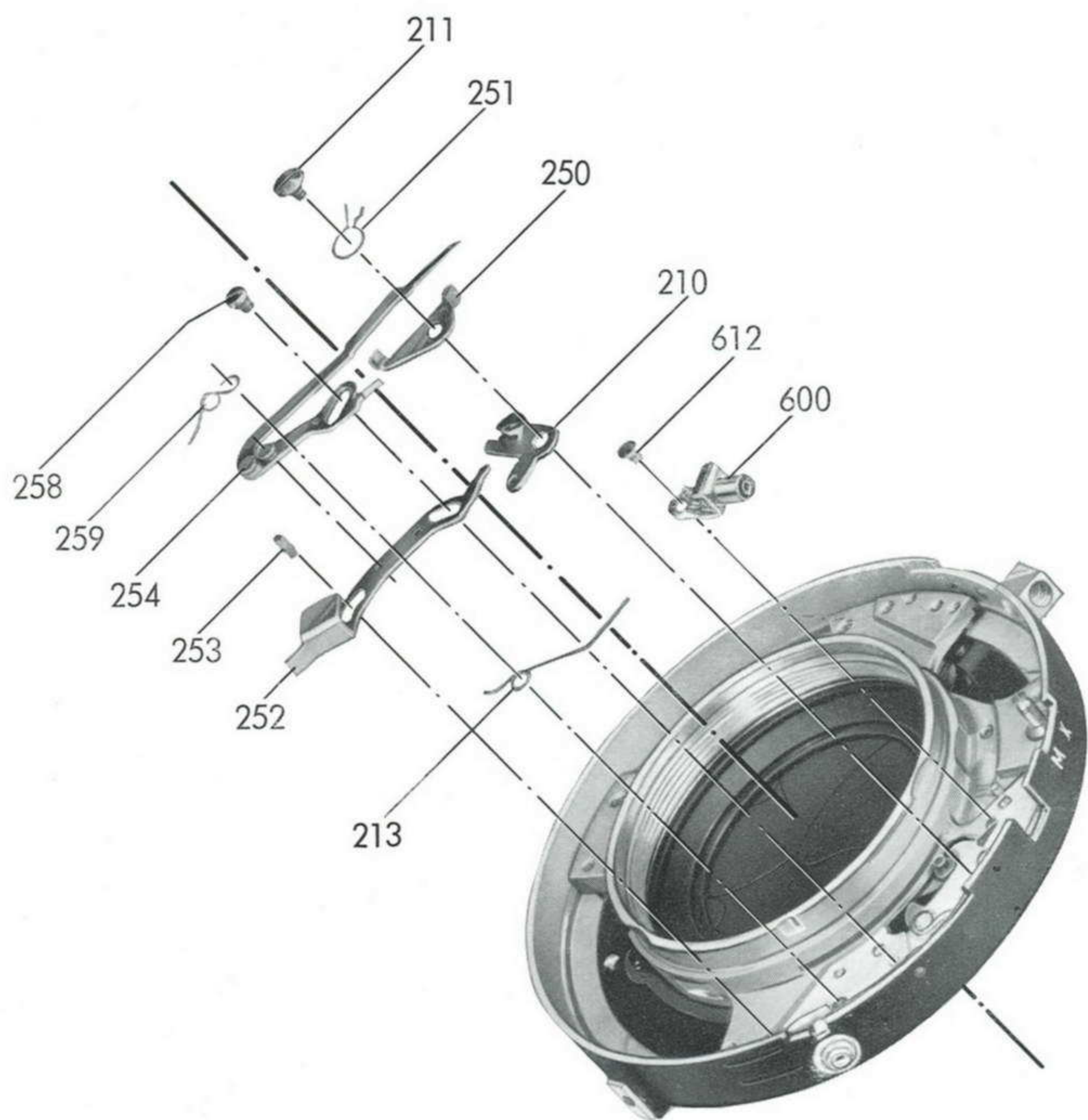
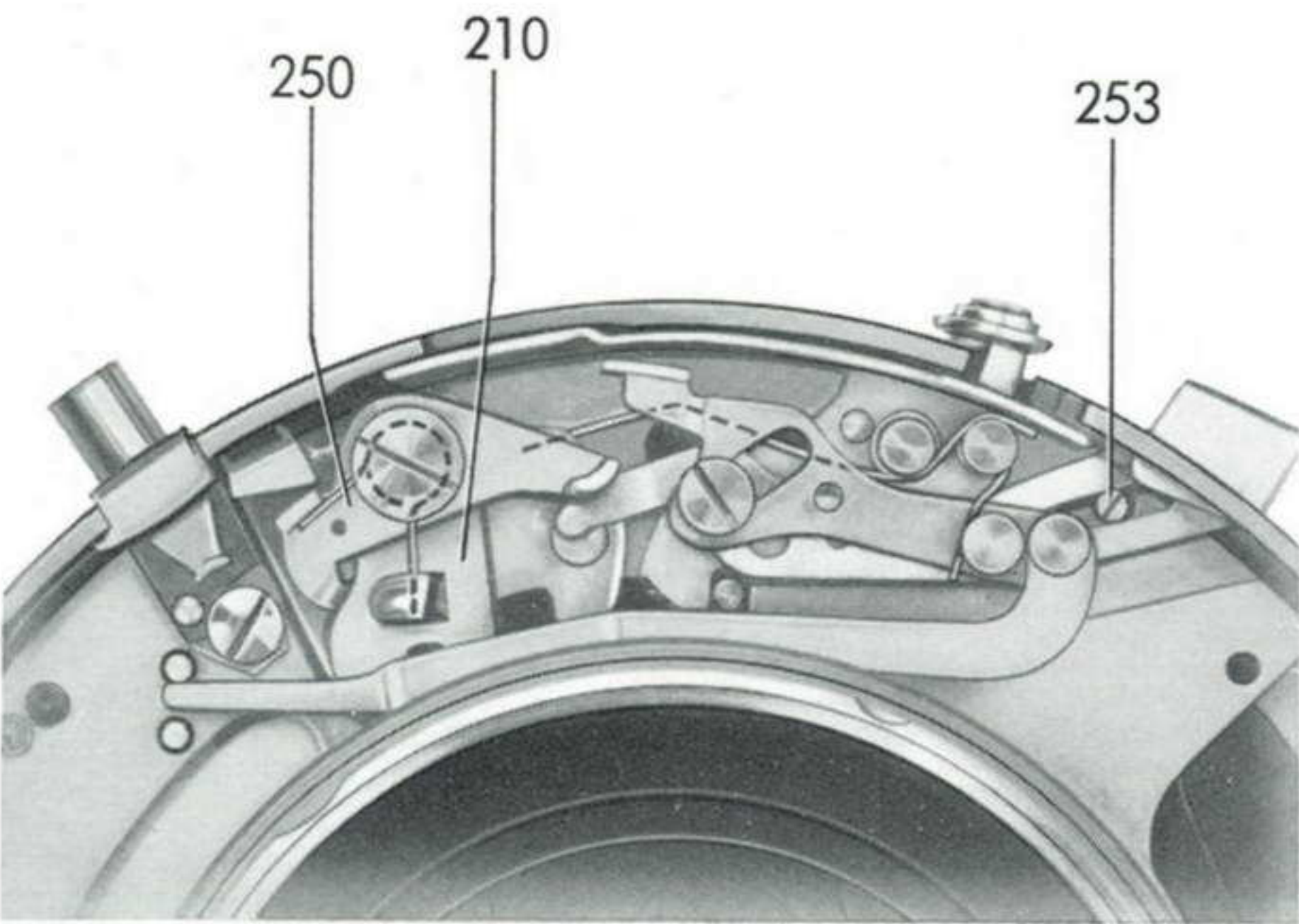
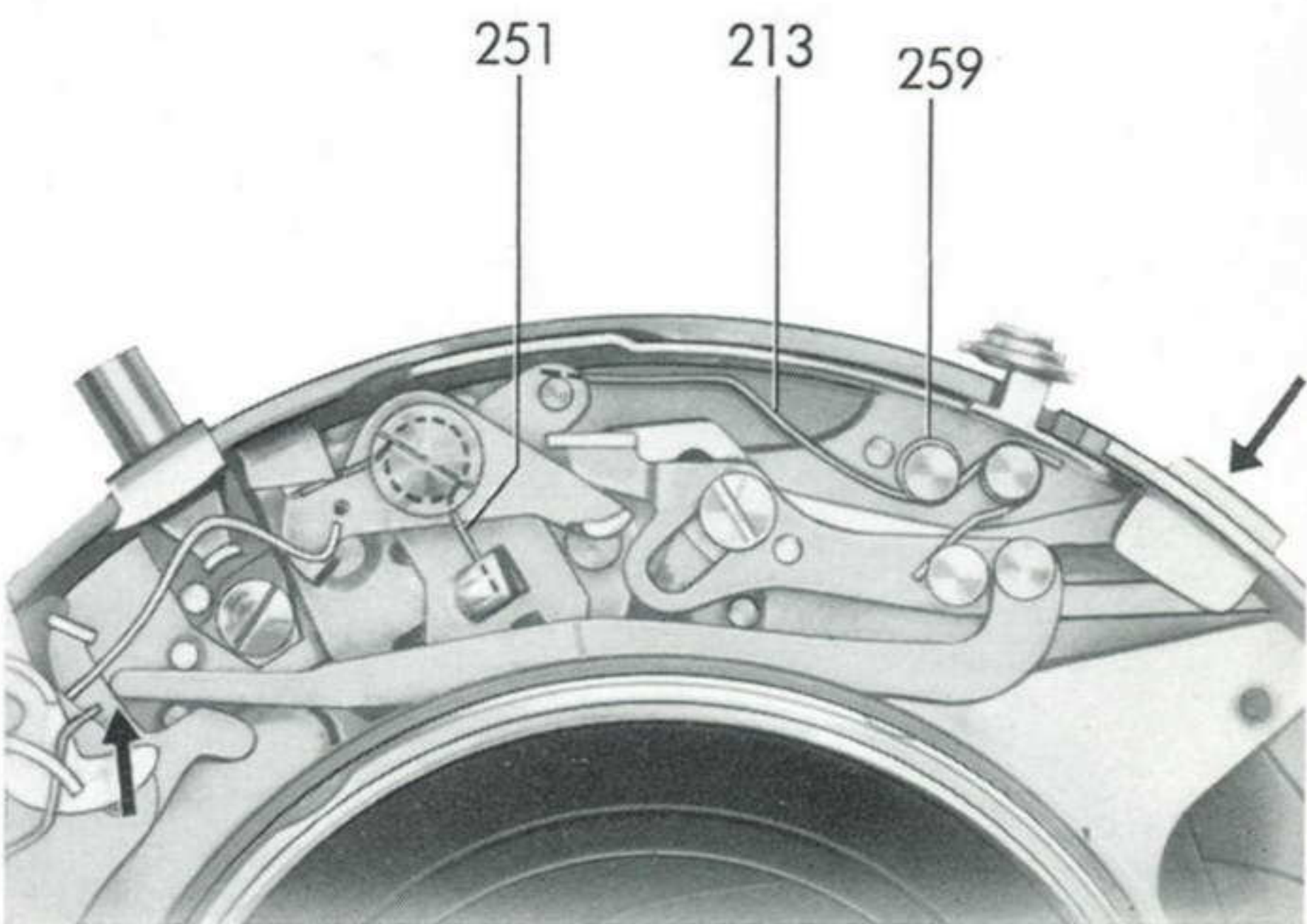


Fig. 1

Fig. 2



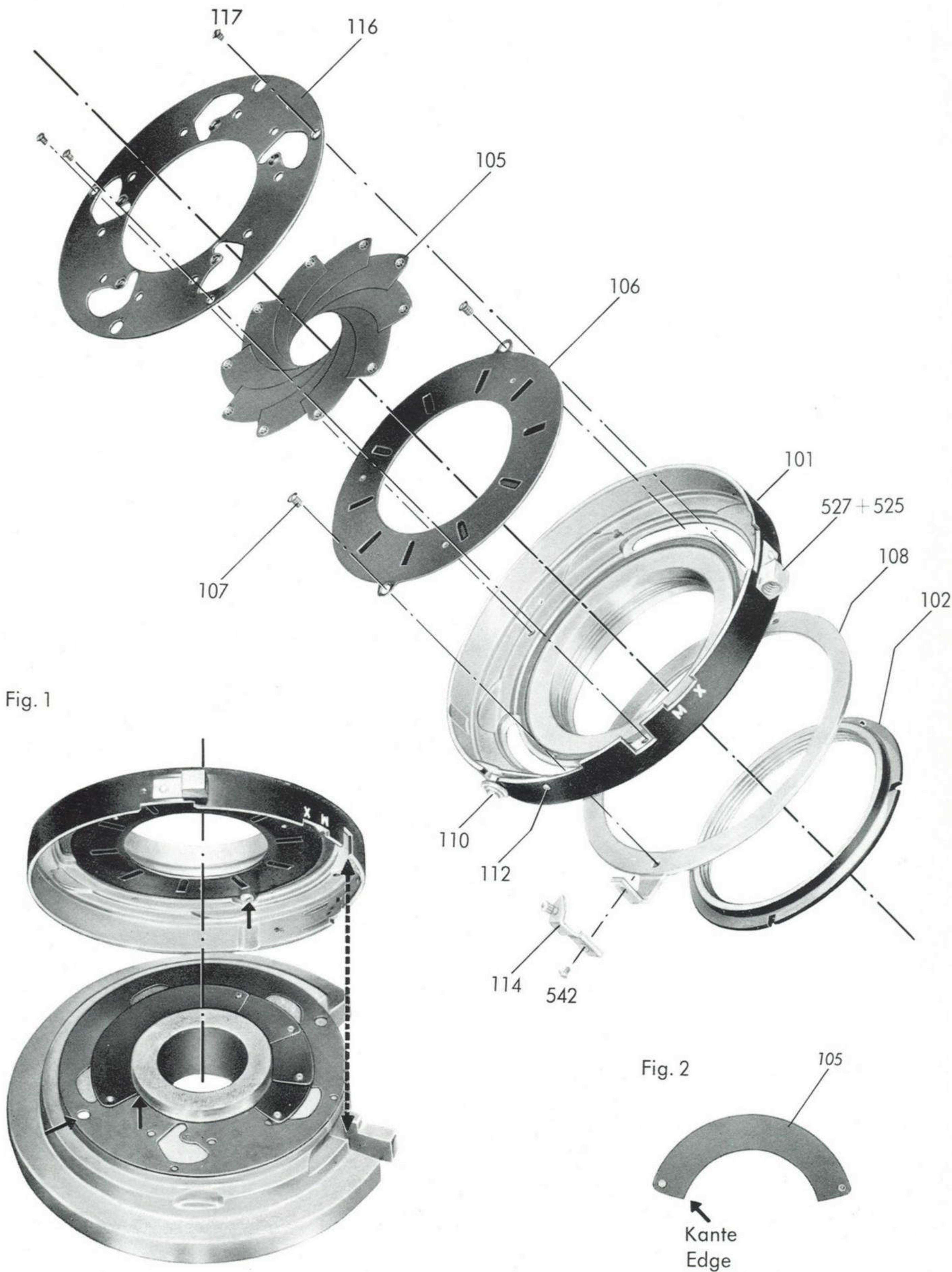
Sektoren geschlossen
Blades closed



Sektoren geöffnet
Blades open

SYNCHRO-COMPUR 1-MX

1307-000
Tafel 7



SYNCHRO-COMPUR 1-MX

1307-000
Tafel 8

Fig. 1

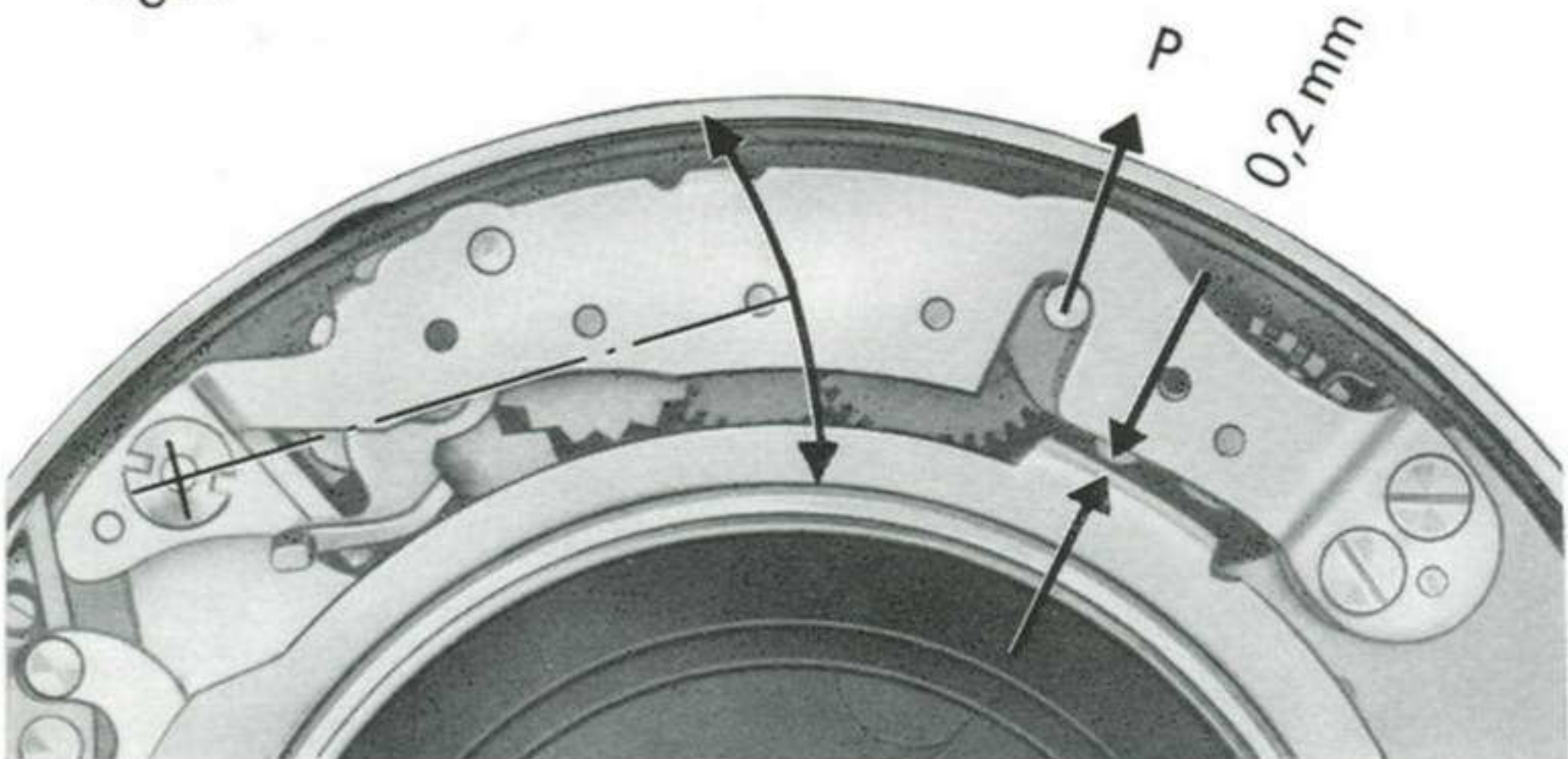


Fig. 2

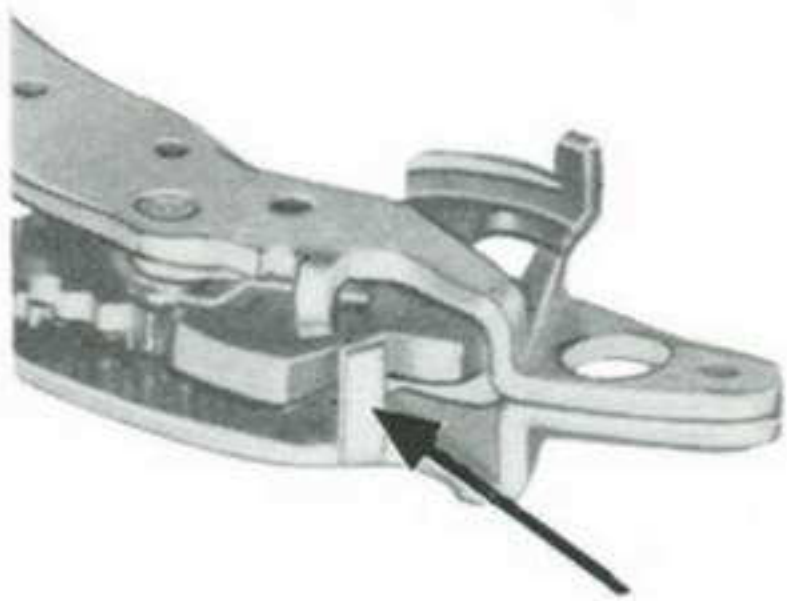


Fig. 3

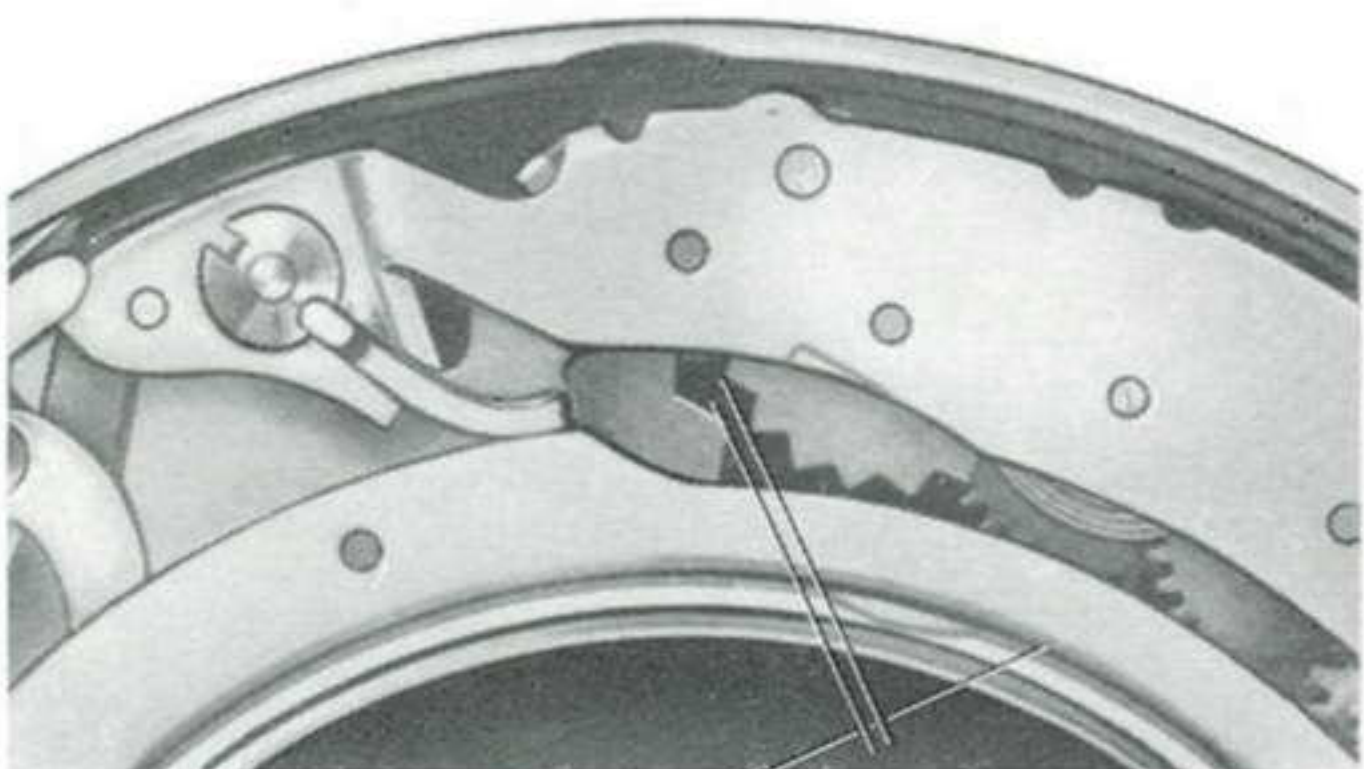


Fig. 5

0,1 ... 0,3 mm

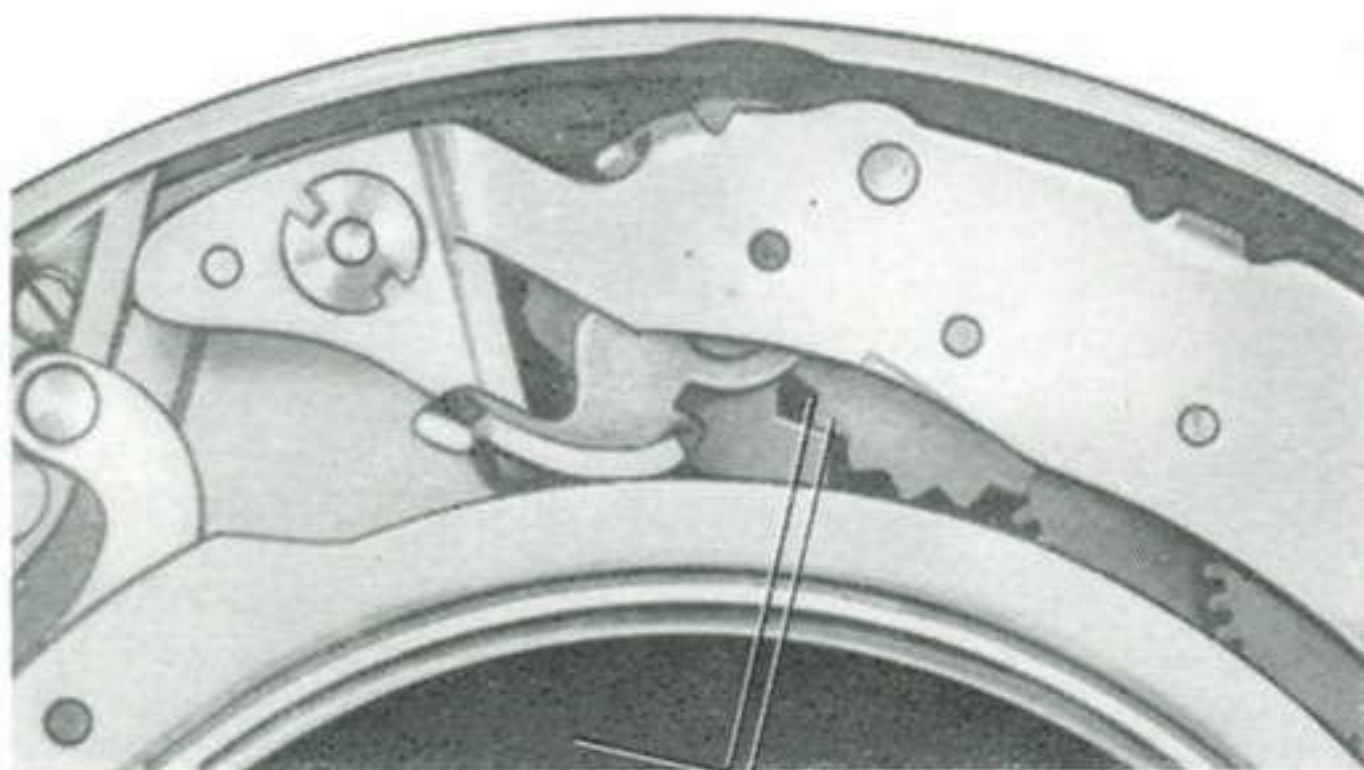
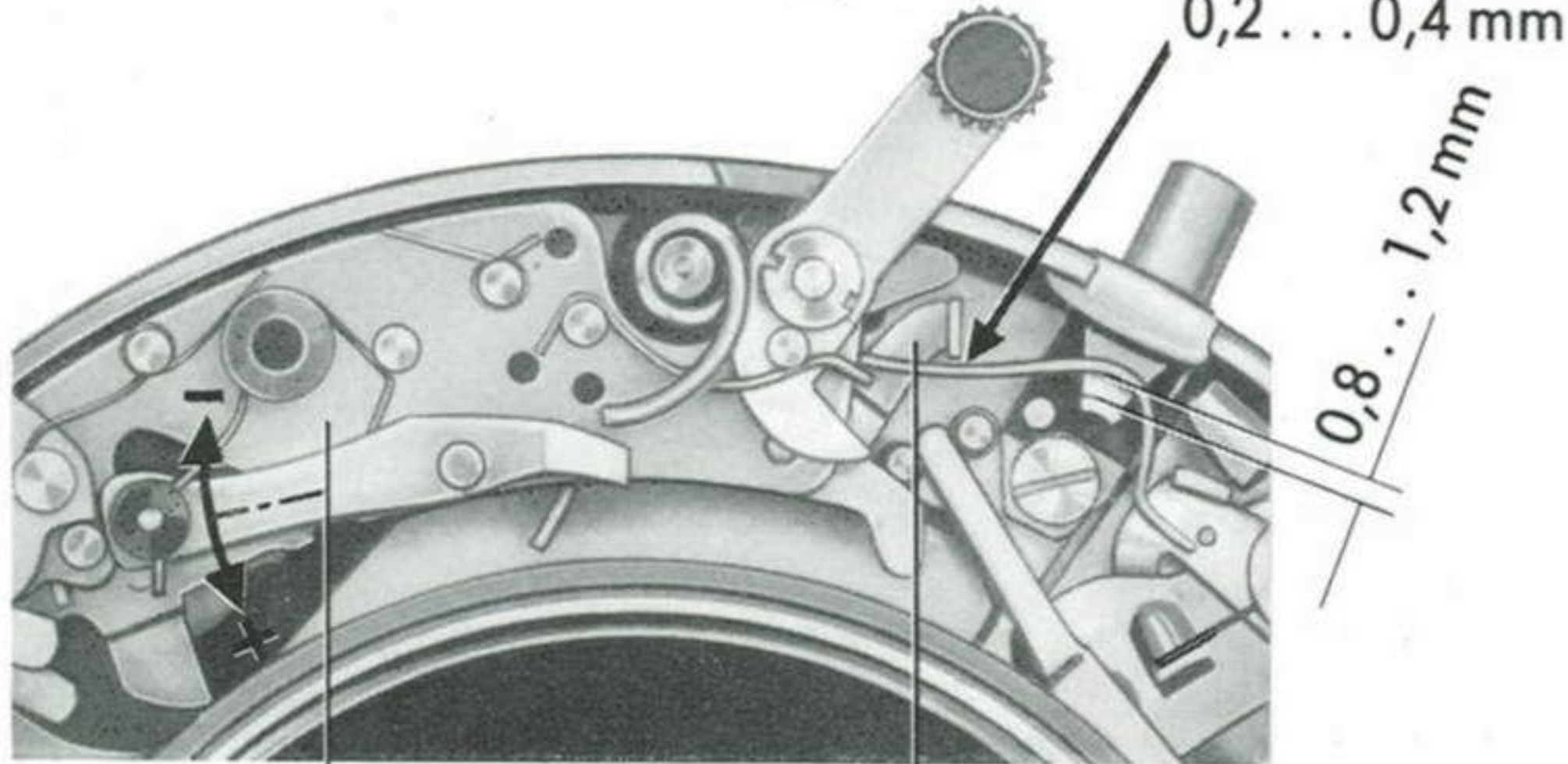


Fig. 6

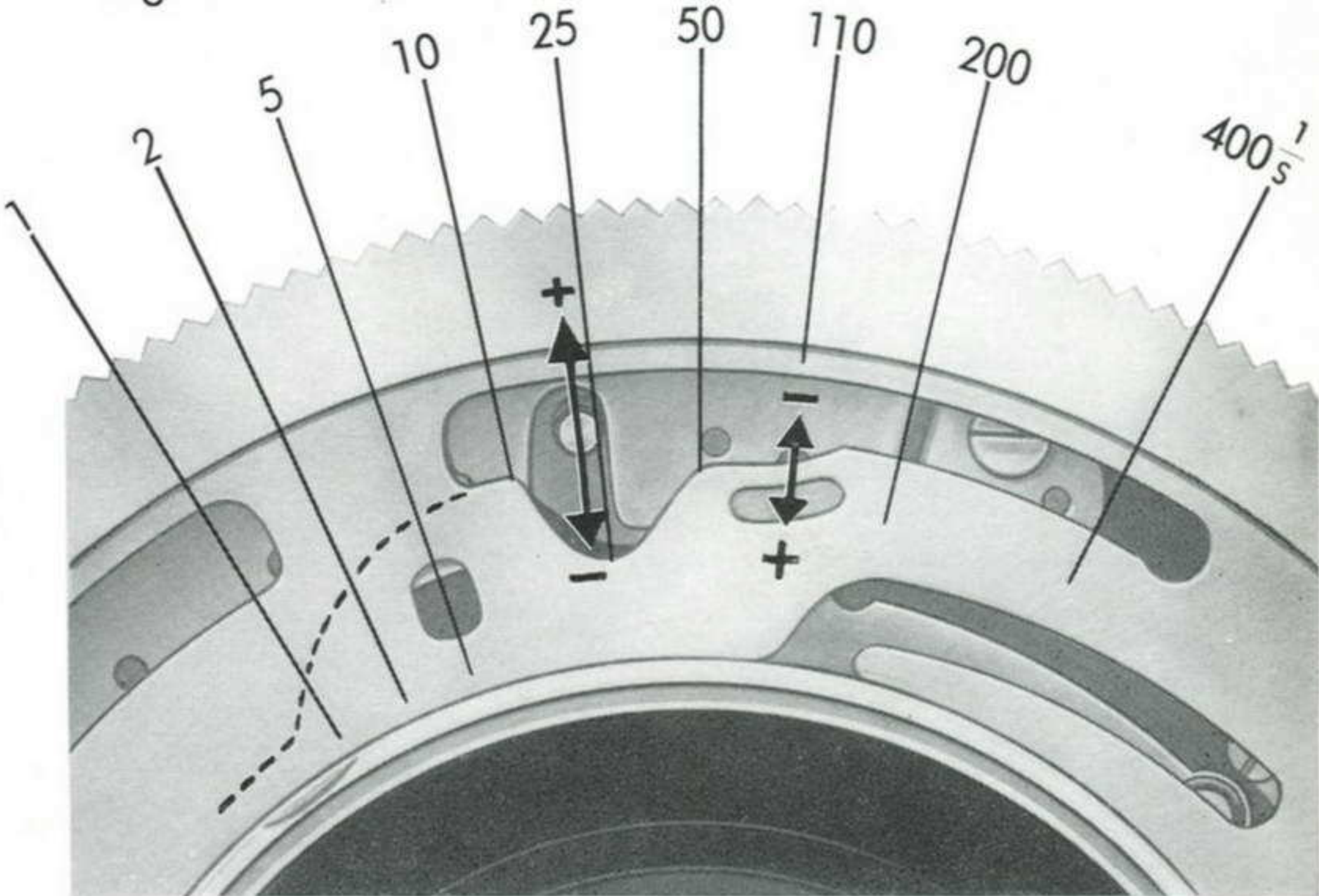
Zahnhöhe
height of tooth
 $\frac{1}{2} \dots \frac{3}{4}$



Justierstelle 3
point of adjustment 3

Justierstelle 1
point of adjustment 1

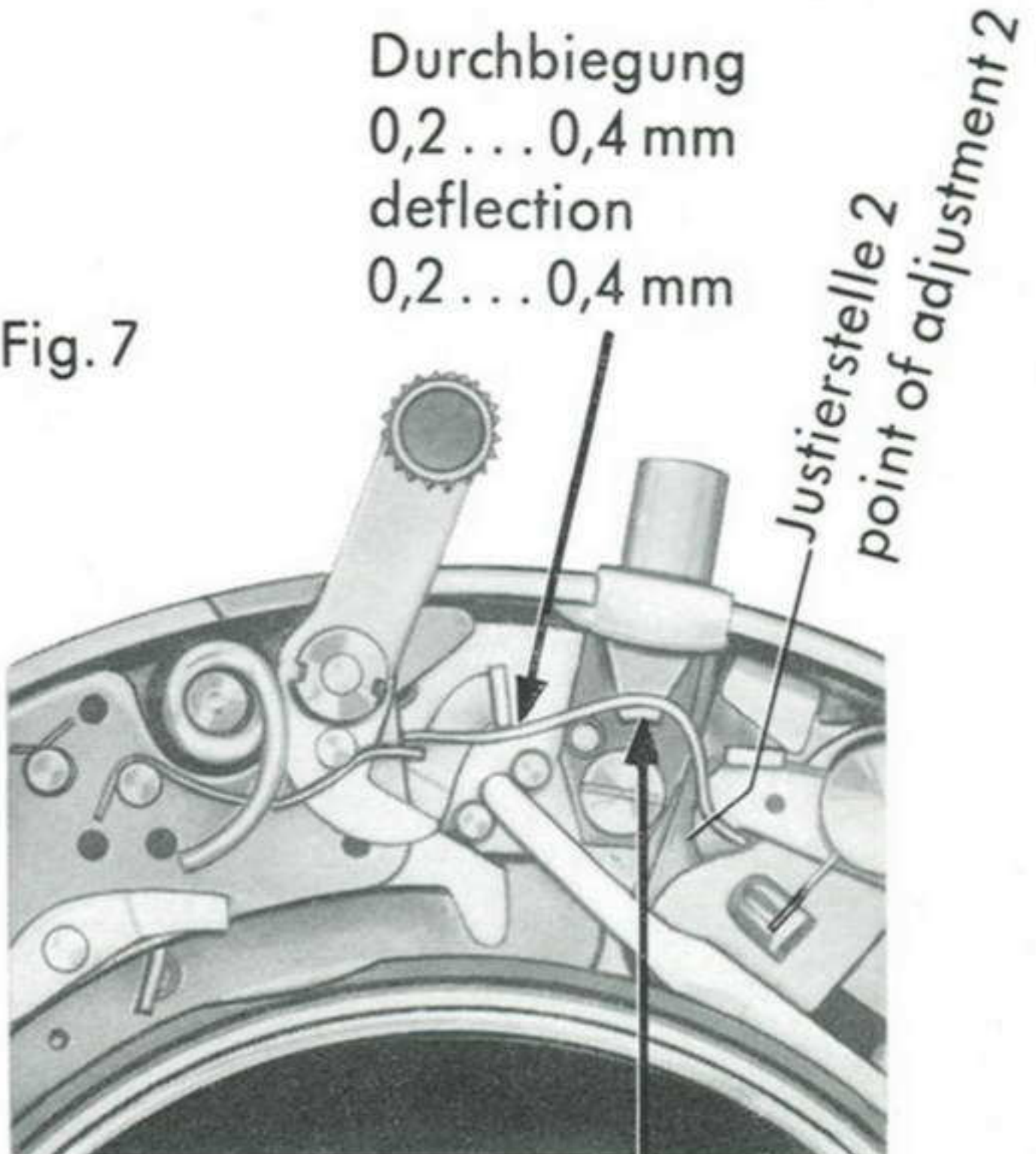
Fig. 4



— Zeit wird kürzer
+ Zeit wird länger

— speed increases
+ speed decreases

Fig. 7



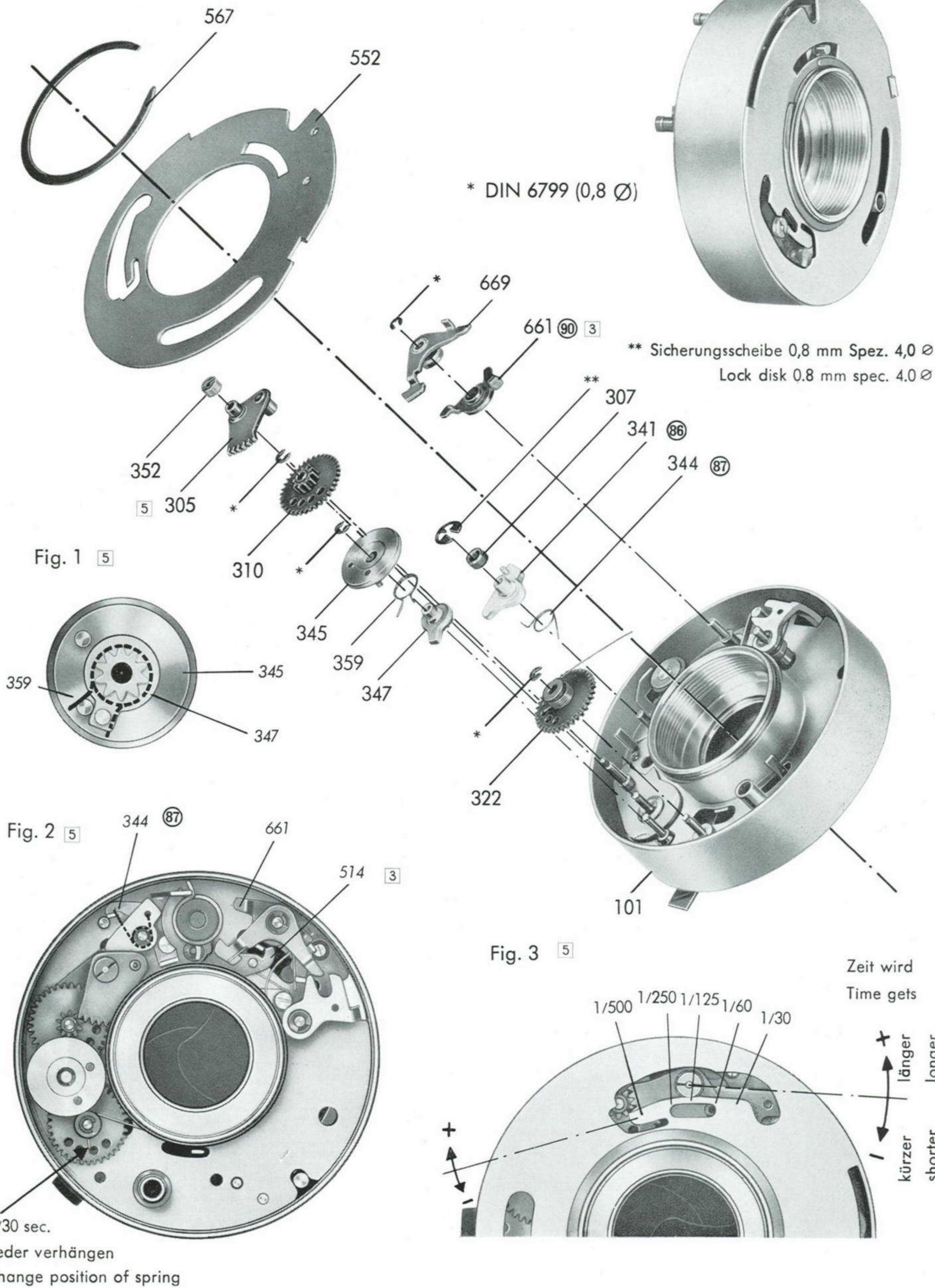
M-Stellung: P=10 ... 20 p
M-position: P=10 ... 20 p

COMPUR-RAPID 000-X

CN-1914-000

Tafel/Plate 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



COMPUR-RAPID 000-X

CN-1914-000
Tafel/Plate 2

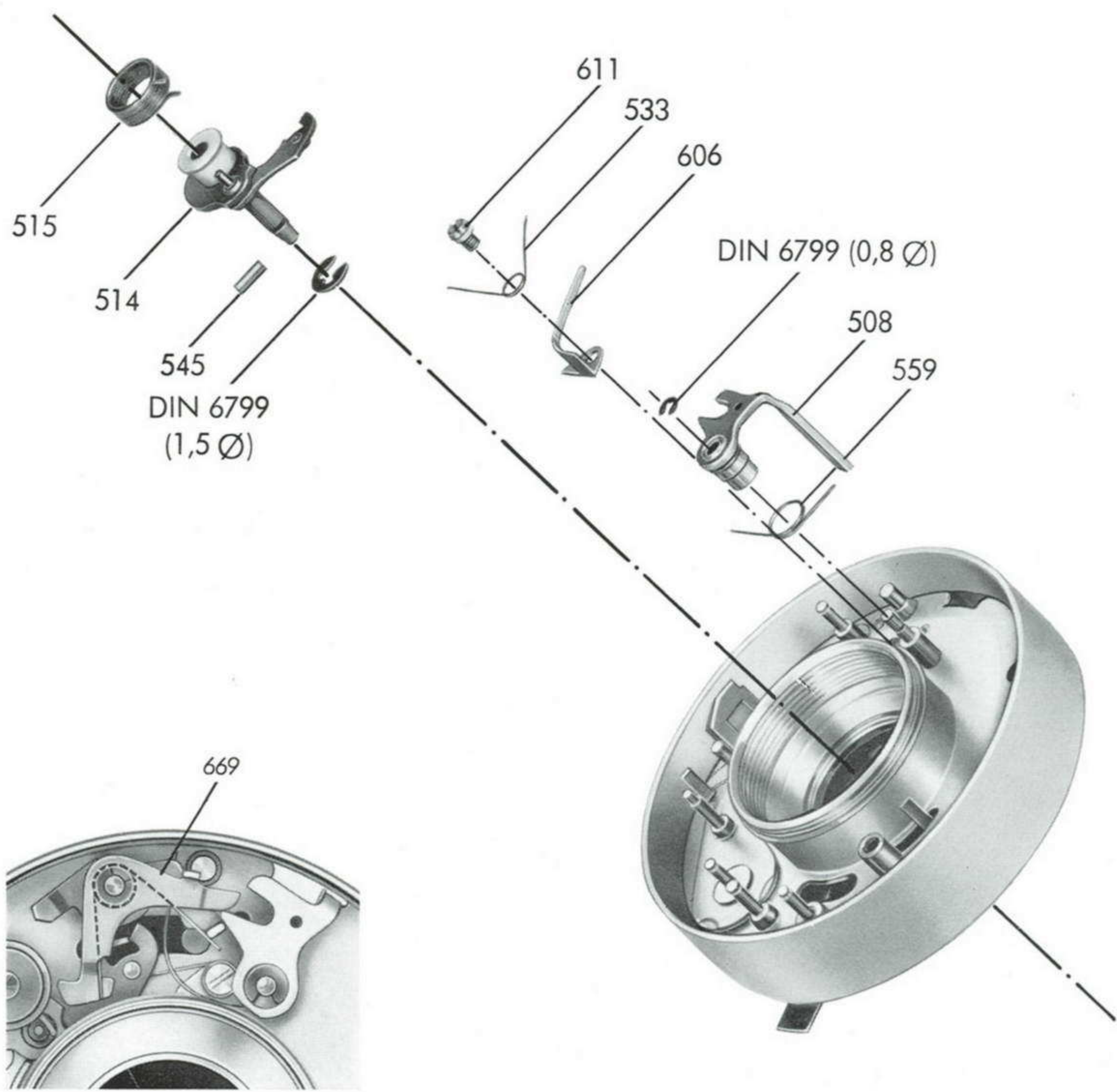


Fig. 1

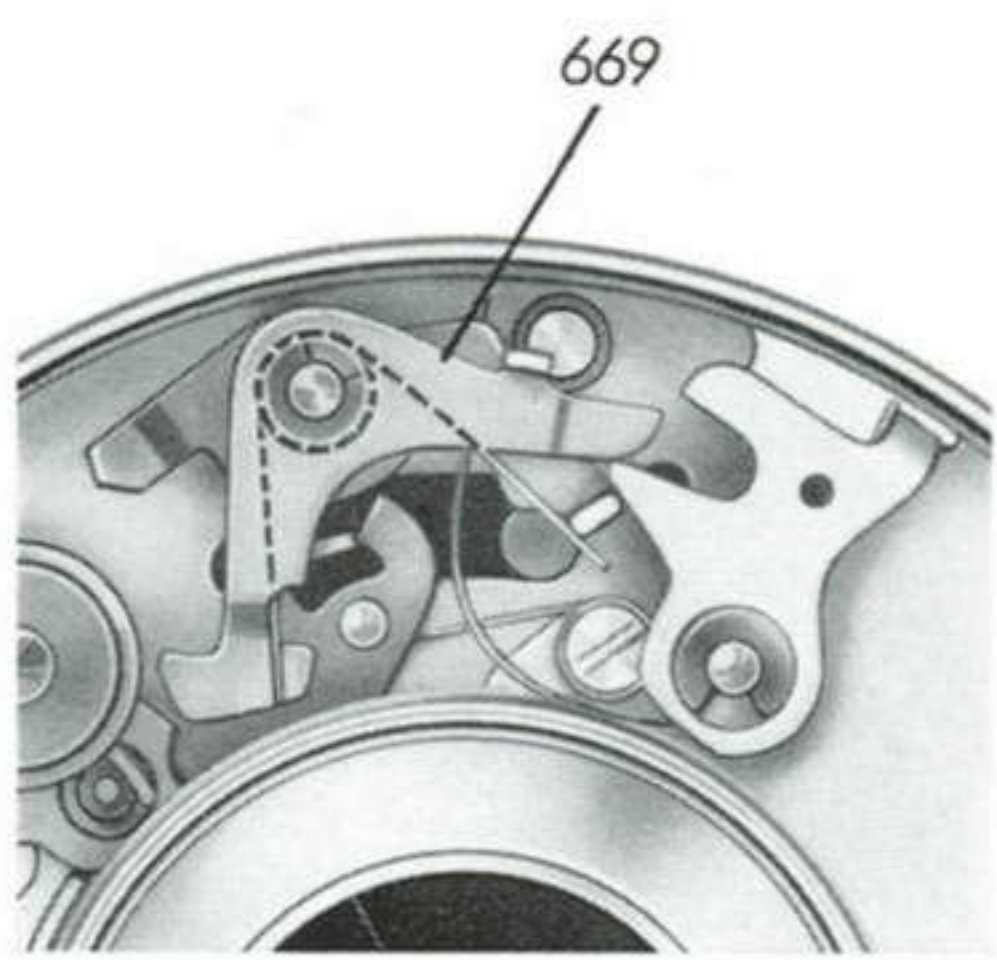


Fig. 2

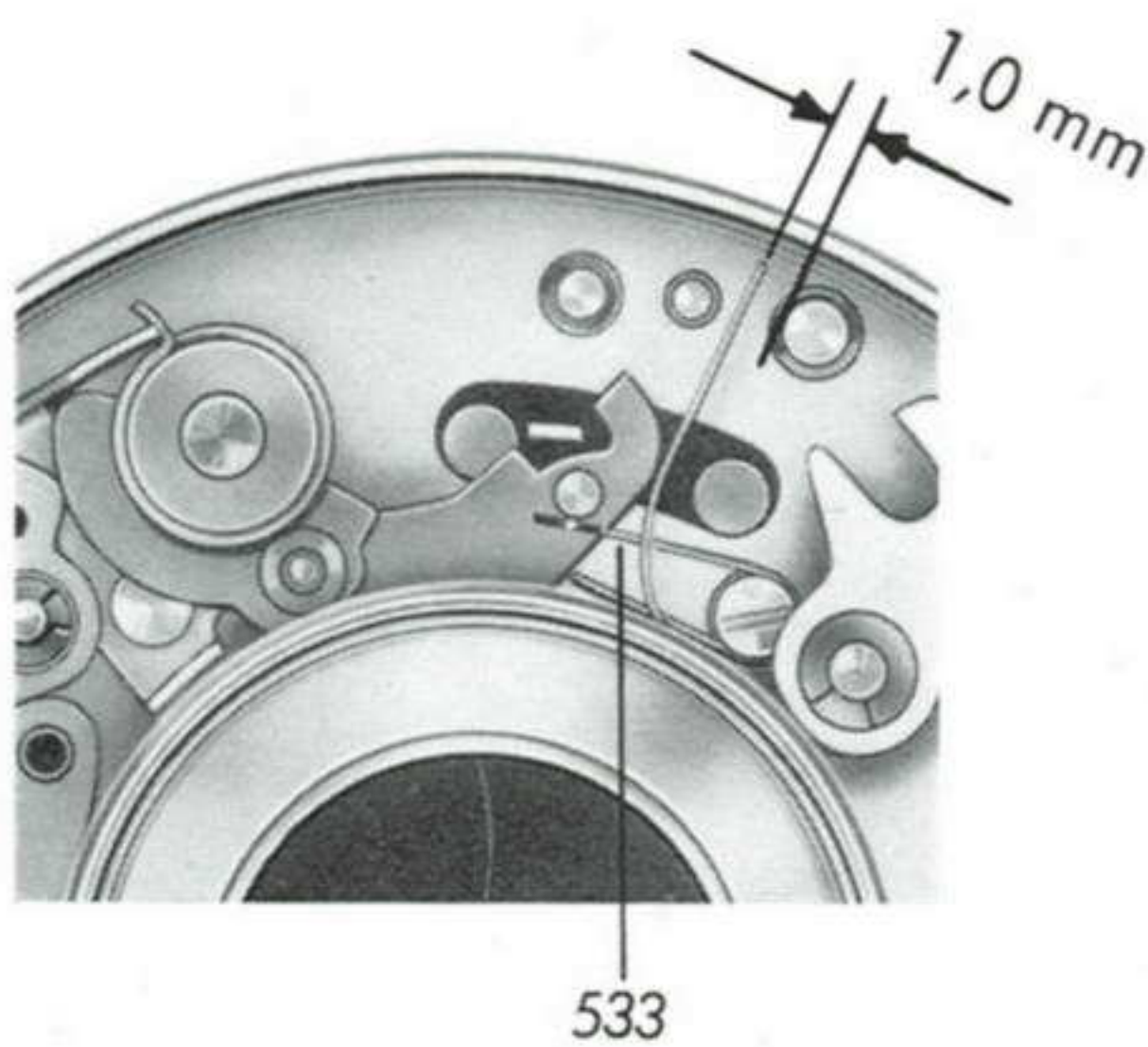
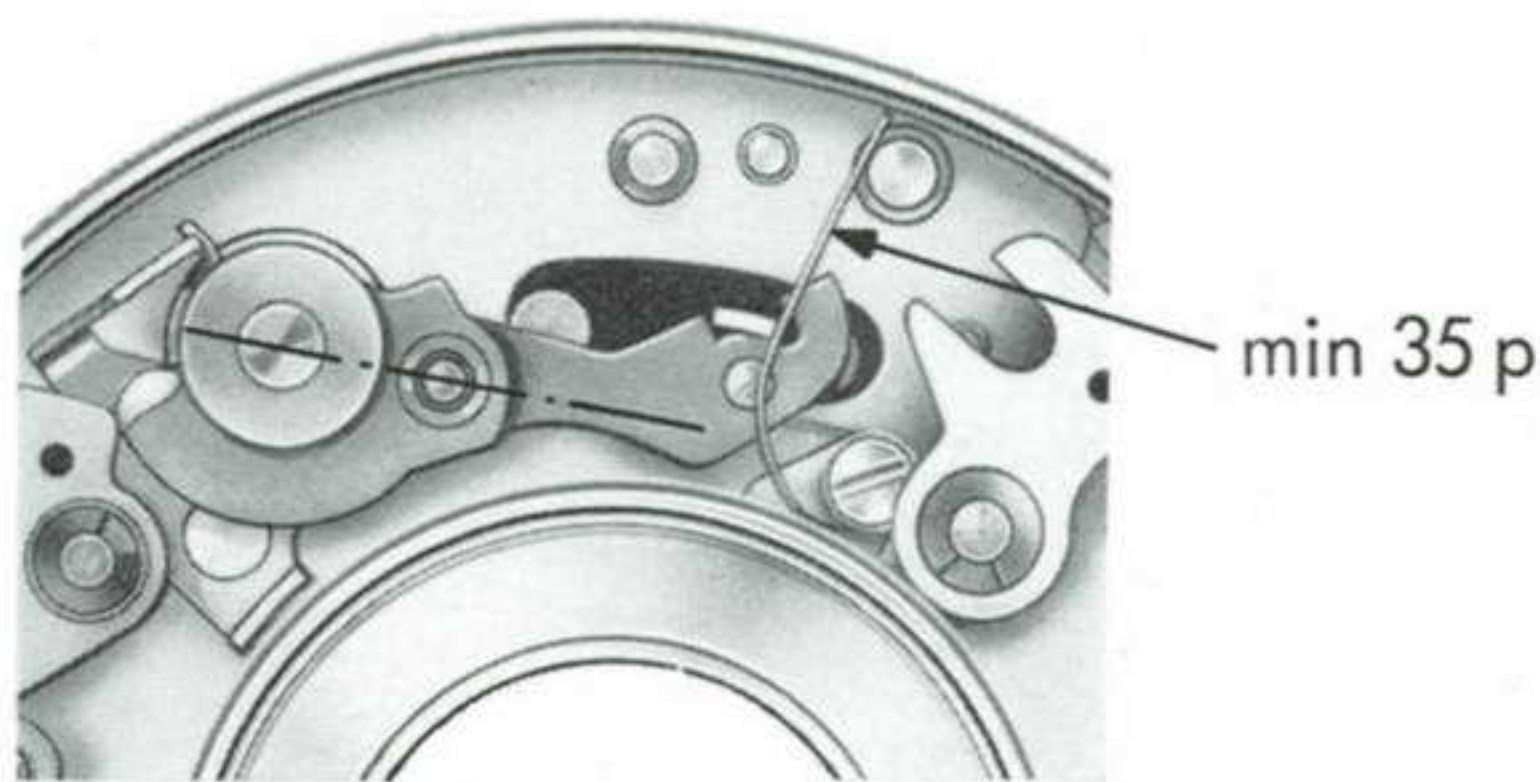


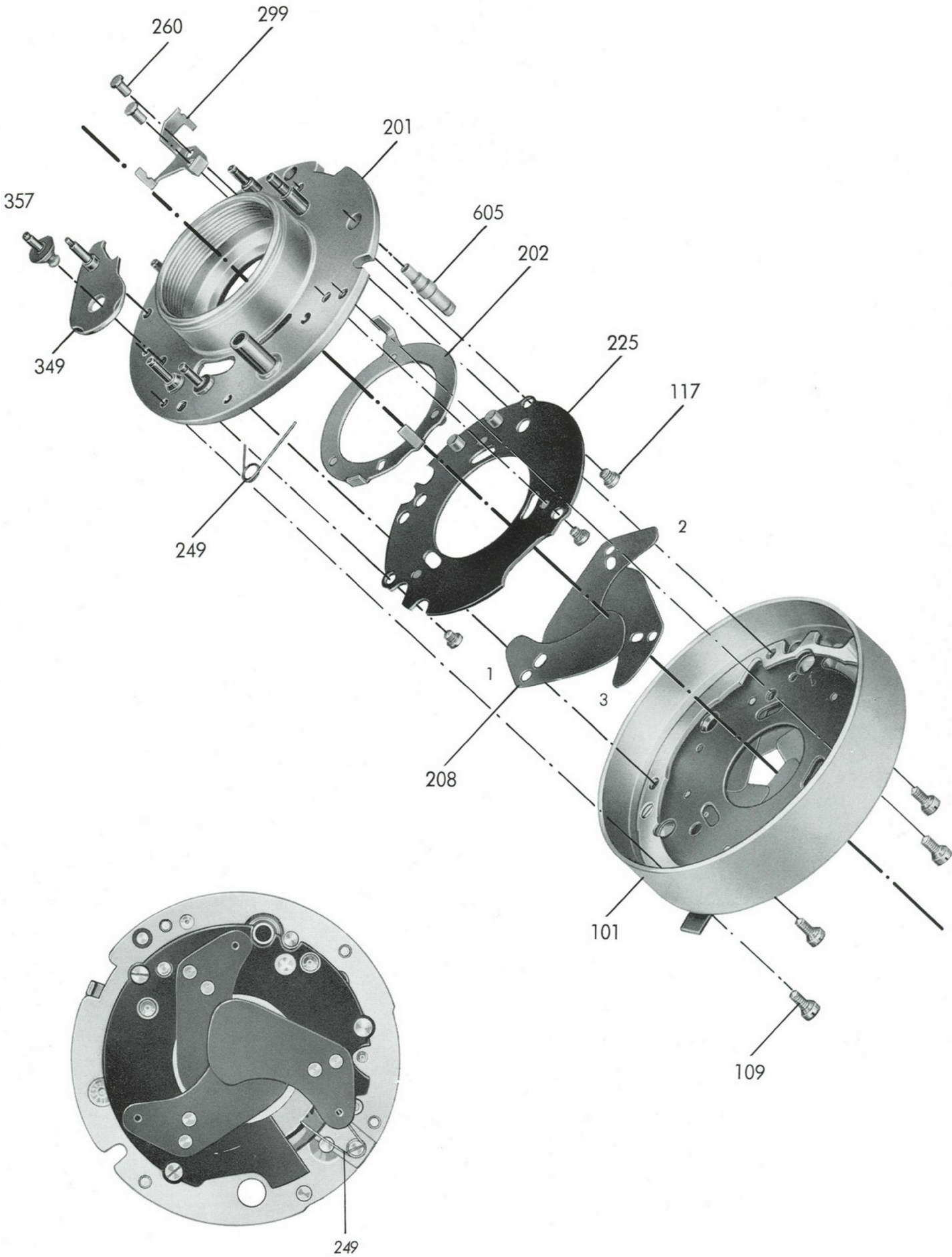
Fig. 3



COMPUR-RAPID 000-X

CN-1914-000

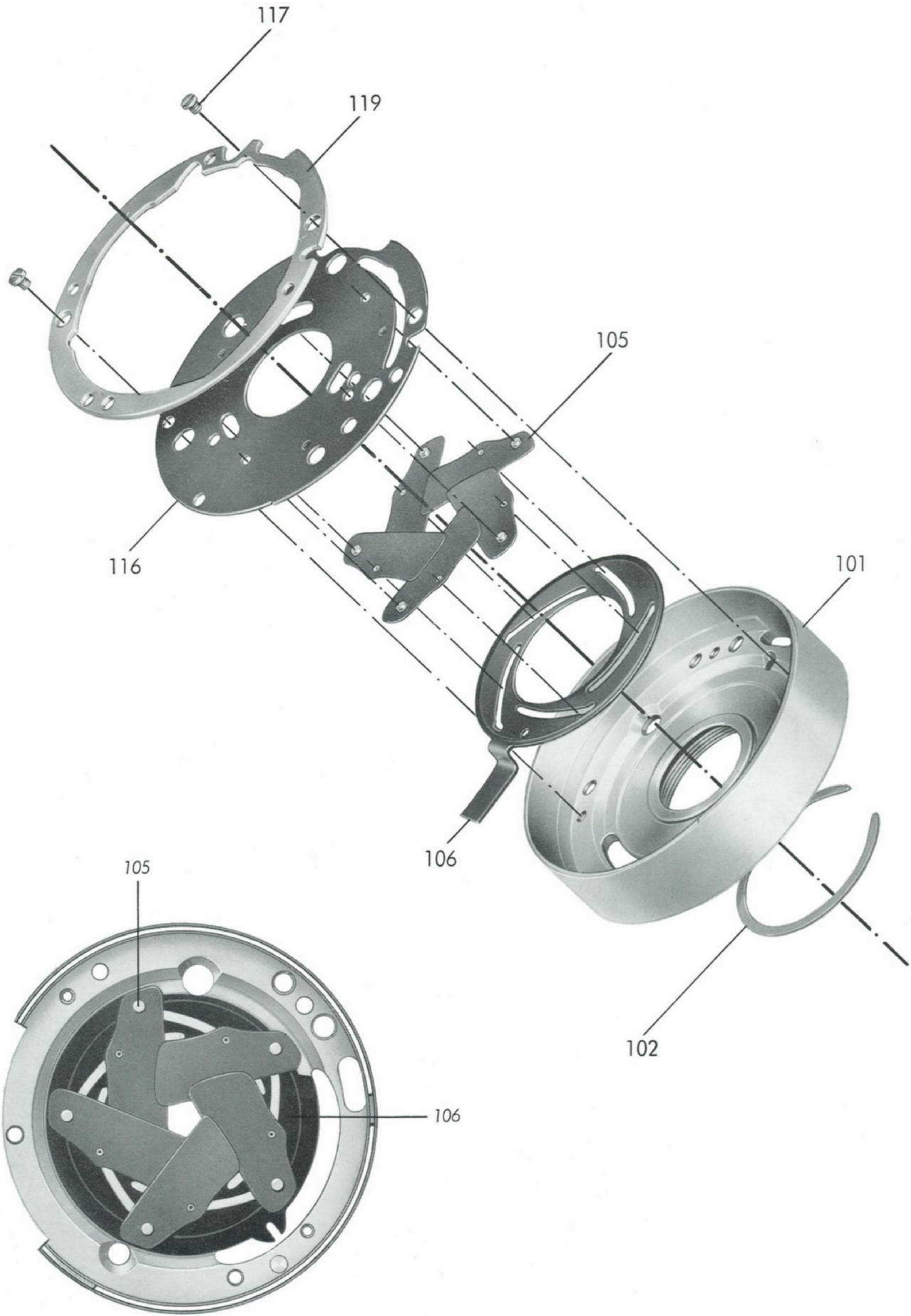
Tafel/Plate 3



COMPUR-RAPID 000-X

CN-1914-000

Tafel/Plate 4



COMPUR 000-X

1915-001

Tafel 1

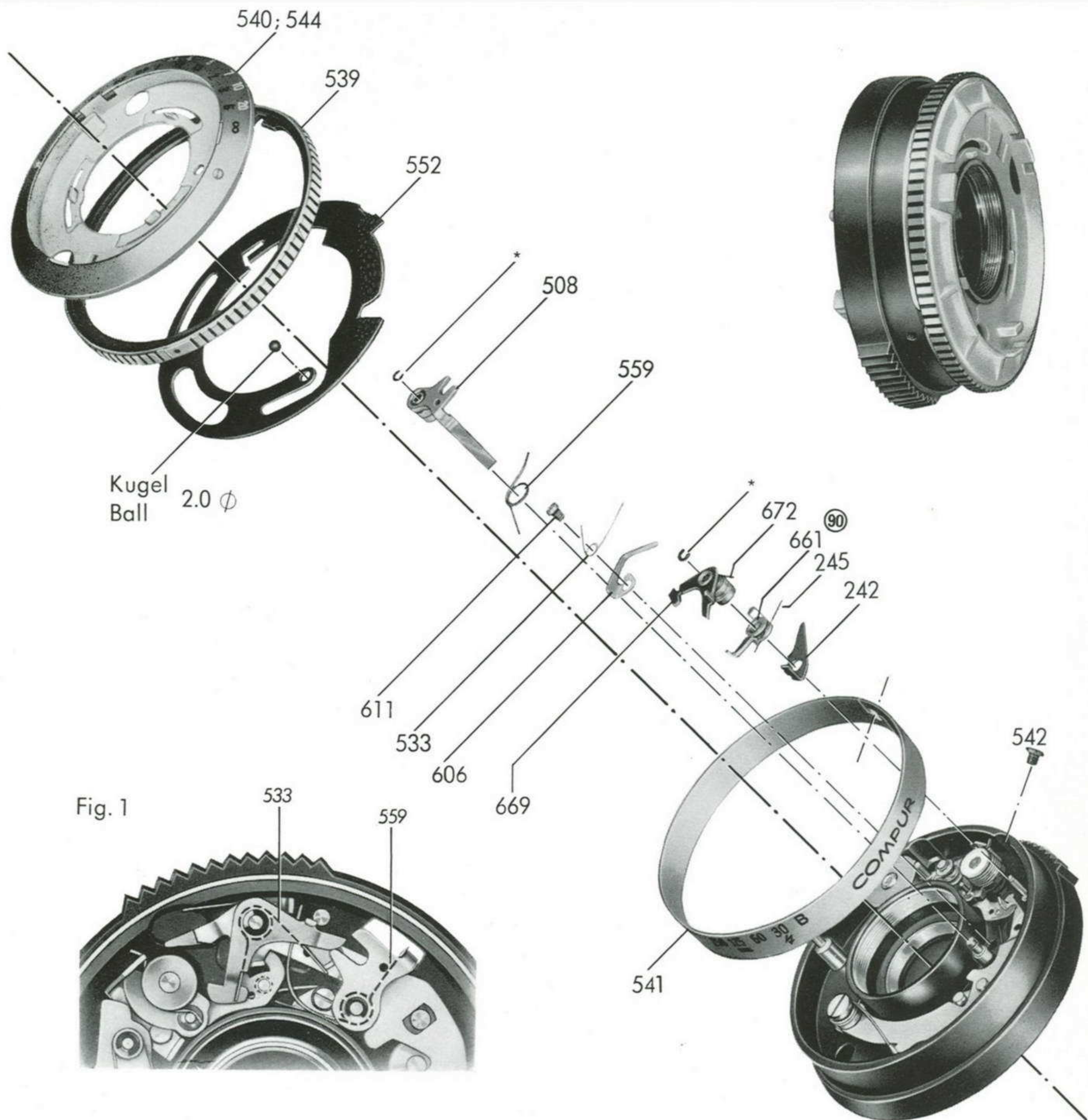


Fig. 1

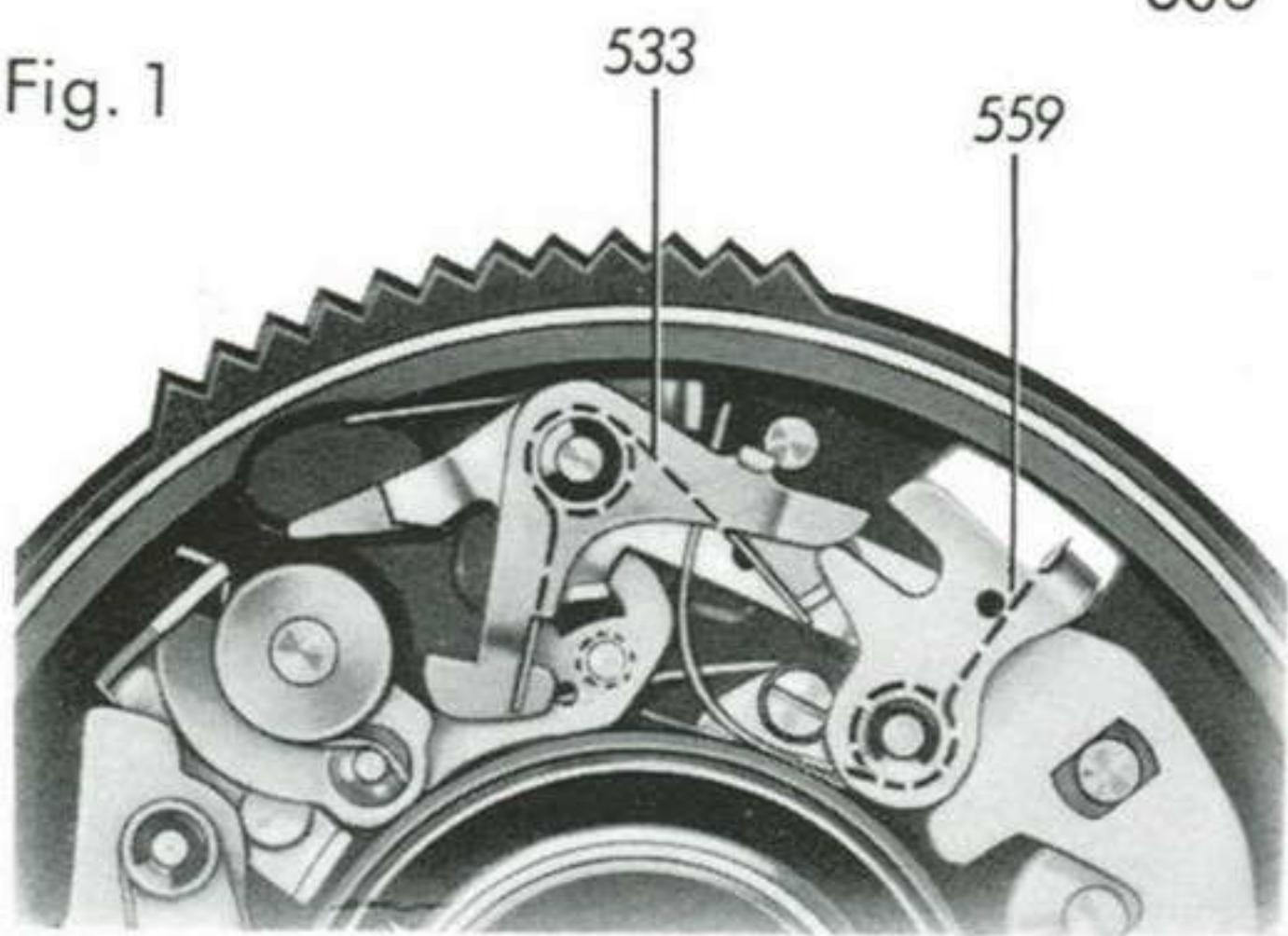


Fig. 2

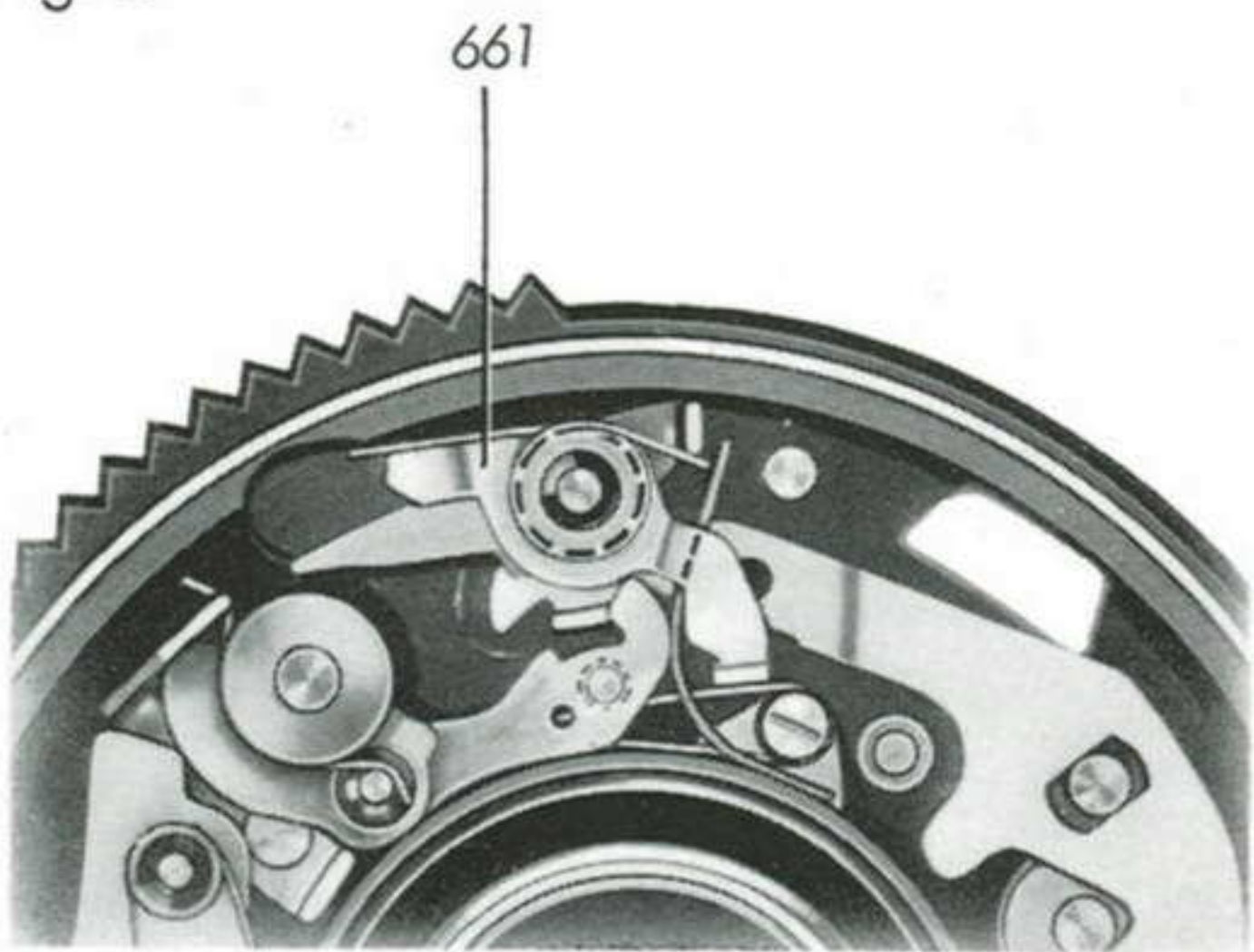
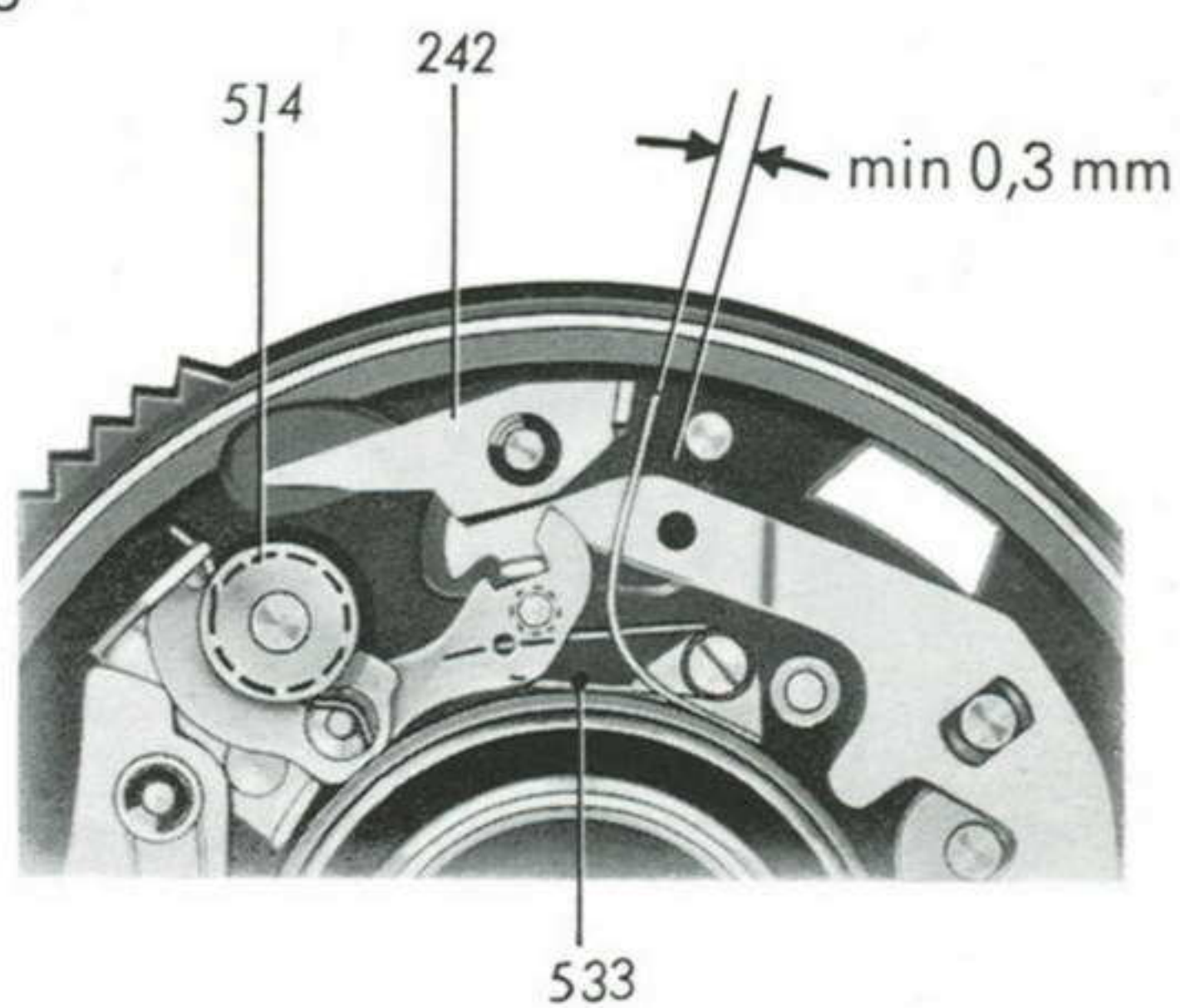


Fig. 3



* Sicherungsscheibe 0,8 mm DIN 6799
* Locking washer

COMPUR 000-X

CN-1915-001

Tafel 2

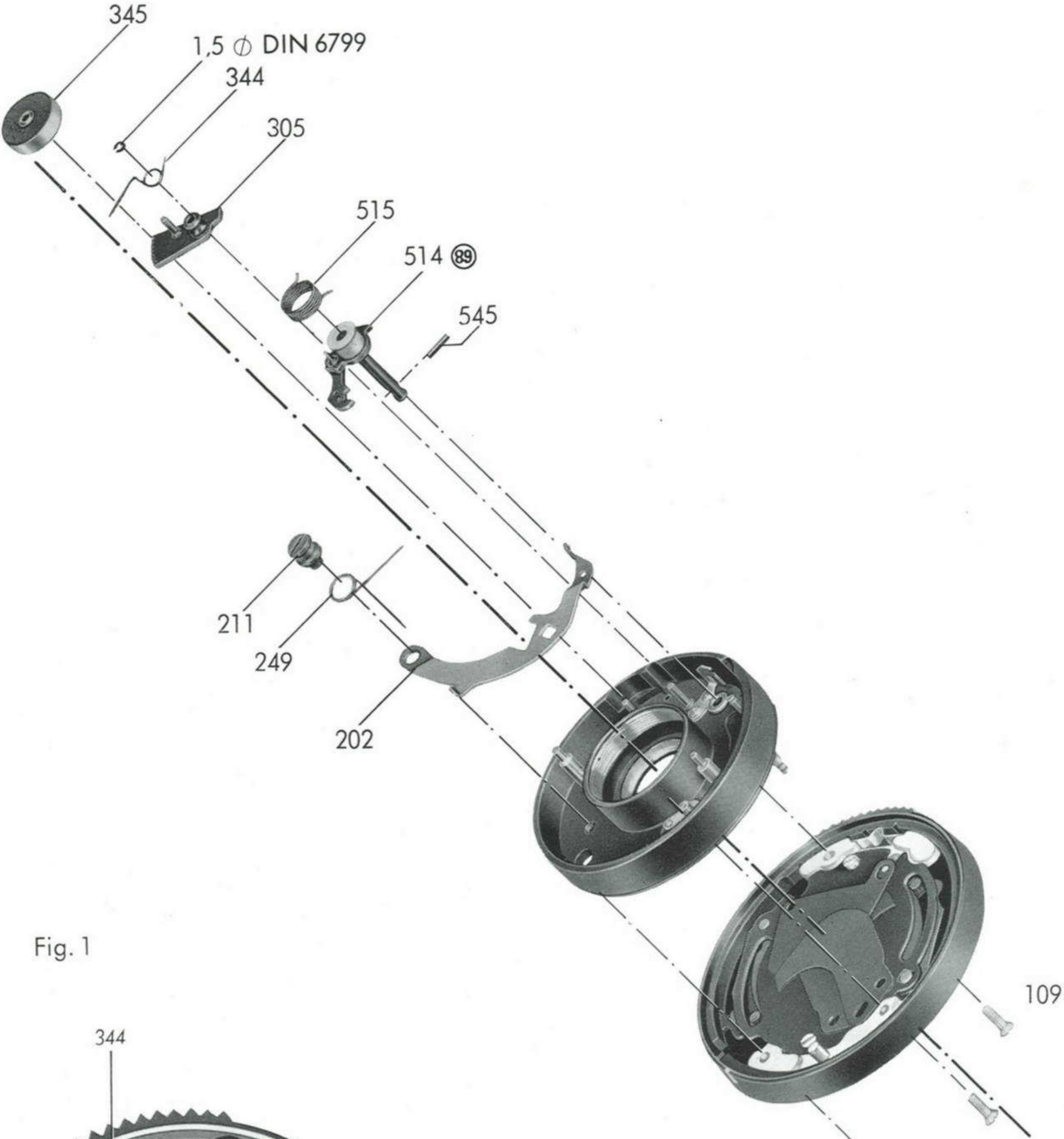


Fig. 1

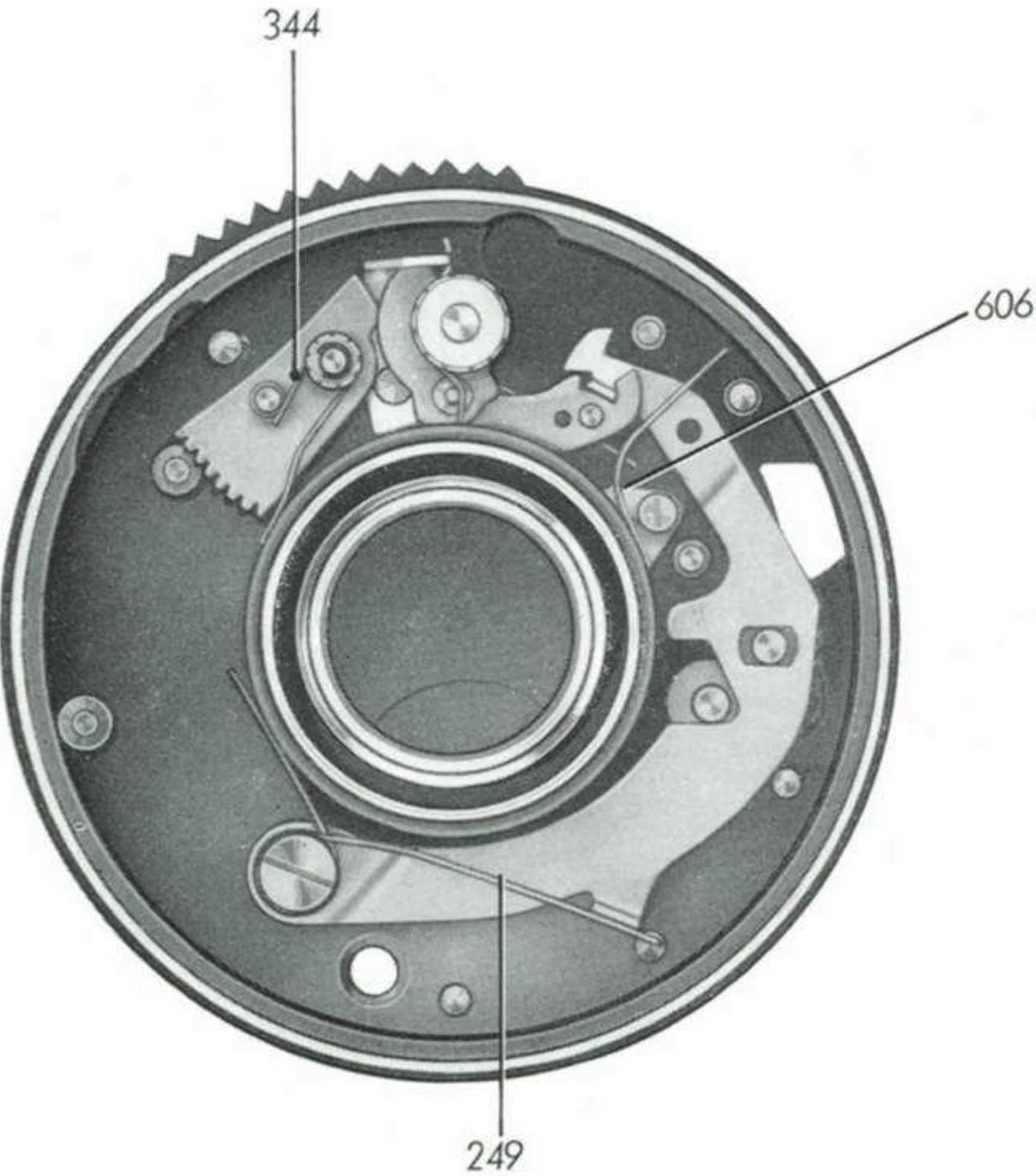
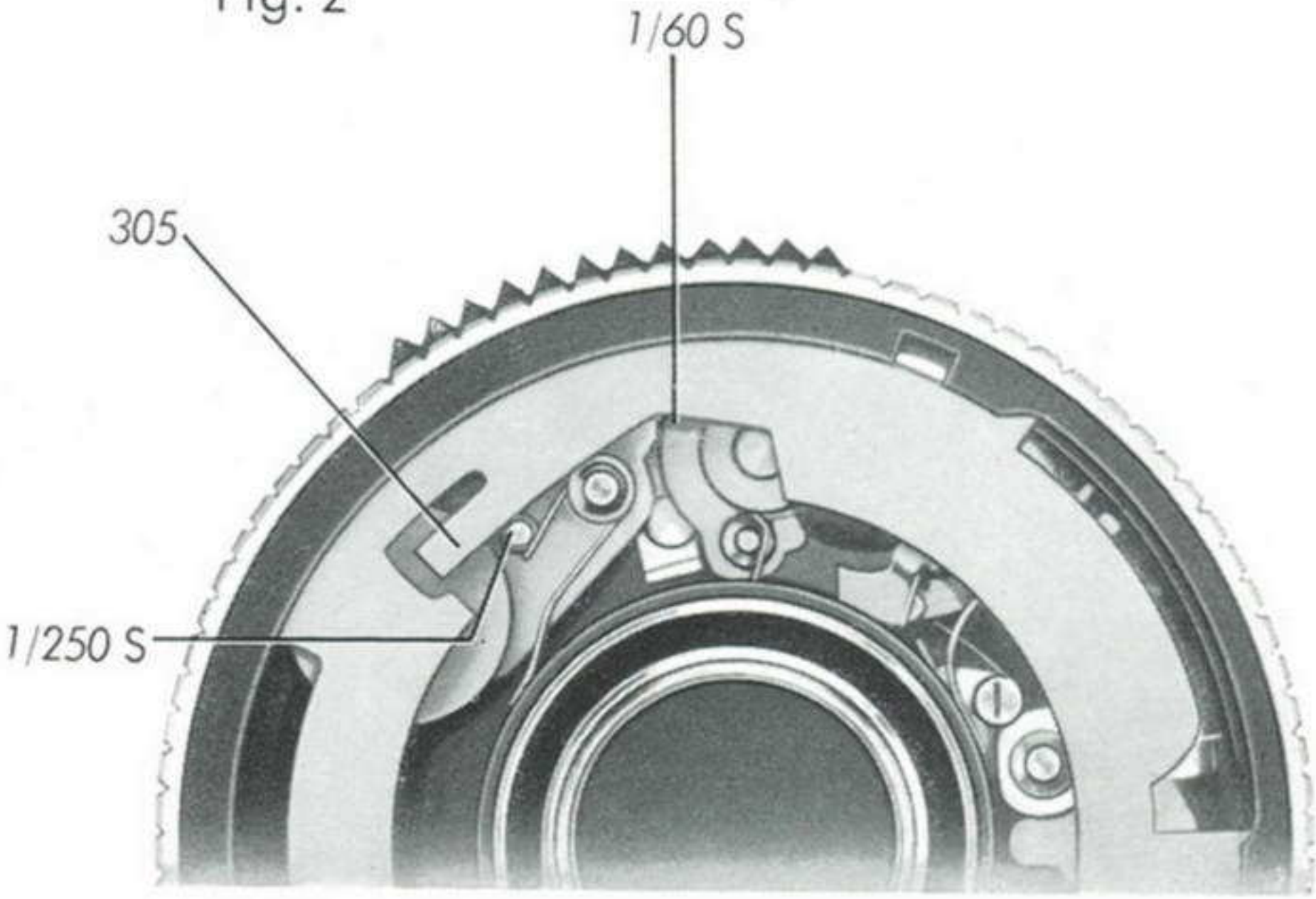


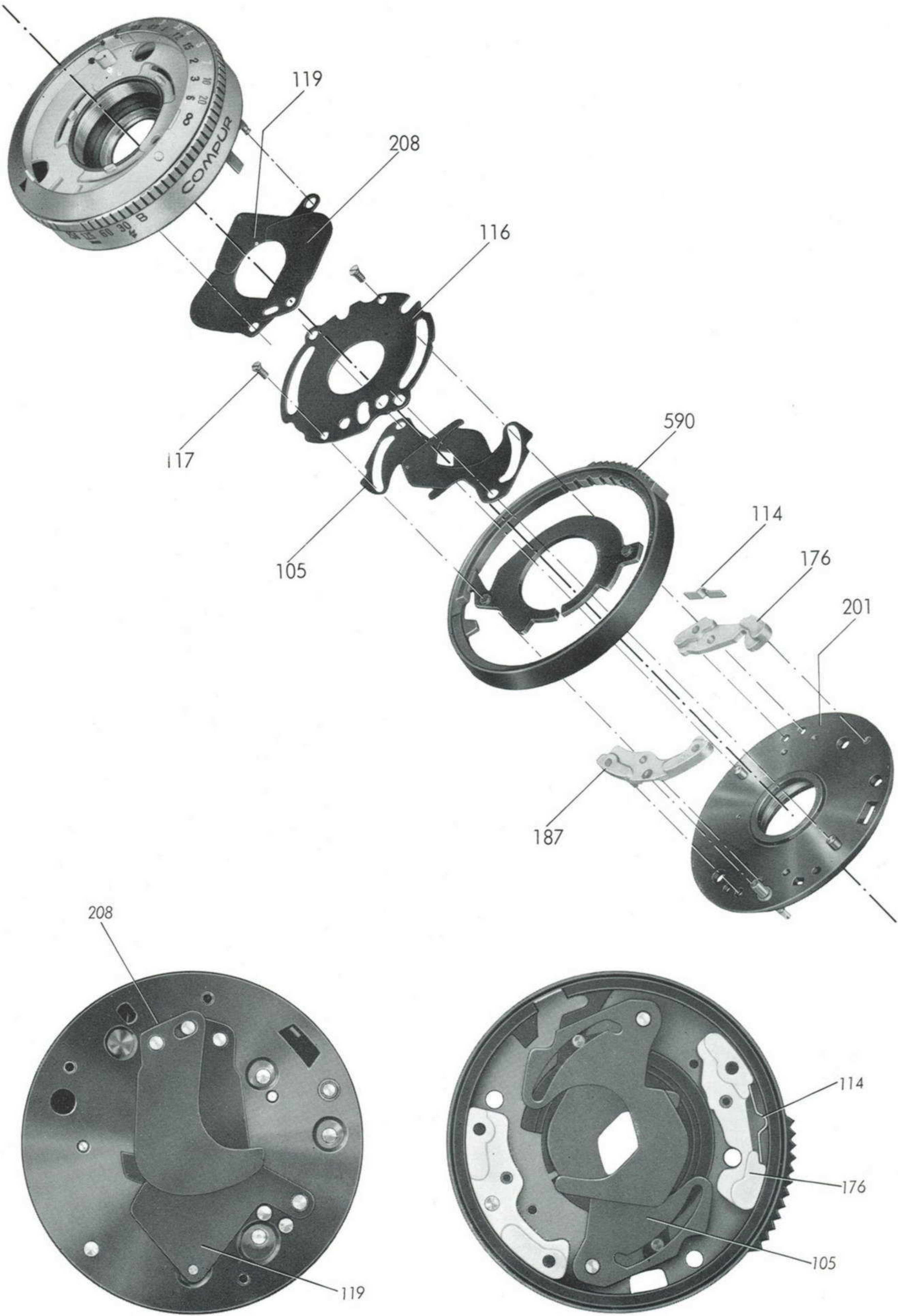
Fig. 2



COMPUR 000-X

CN-1915-001

Tafel 3

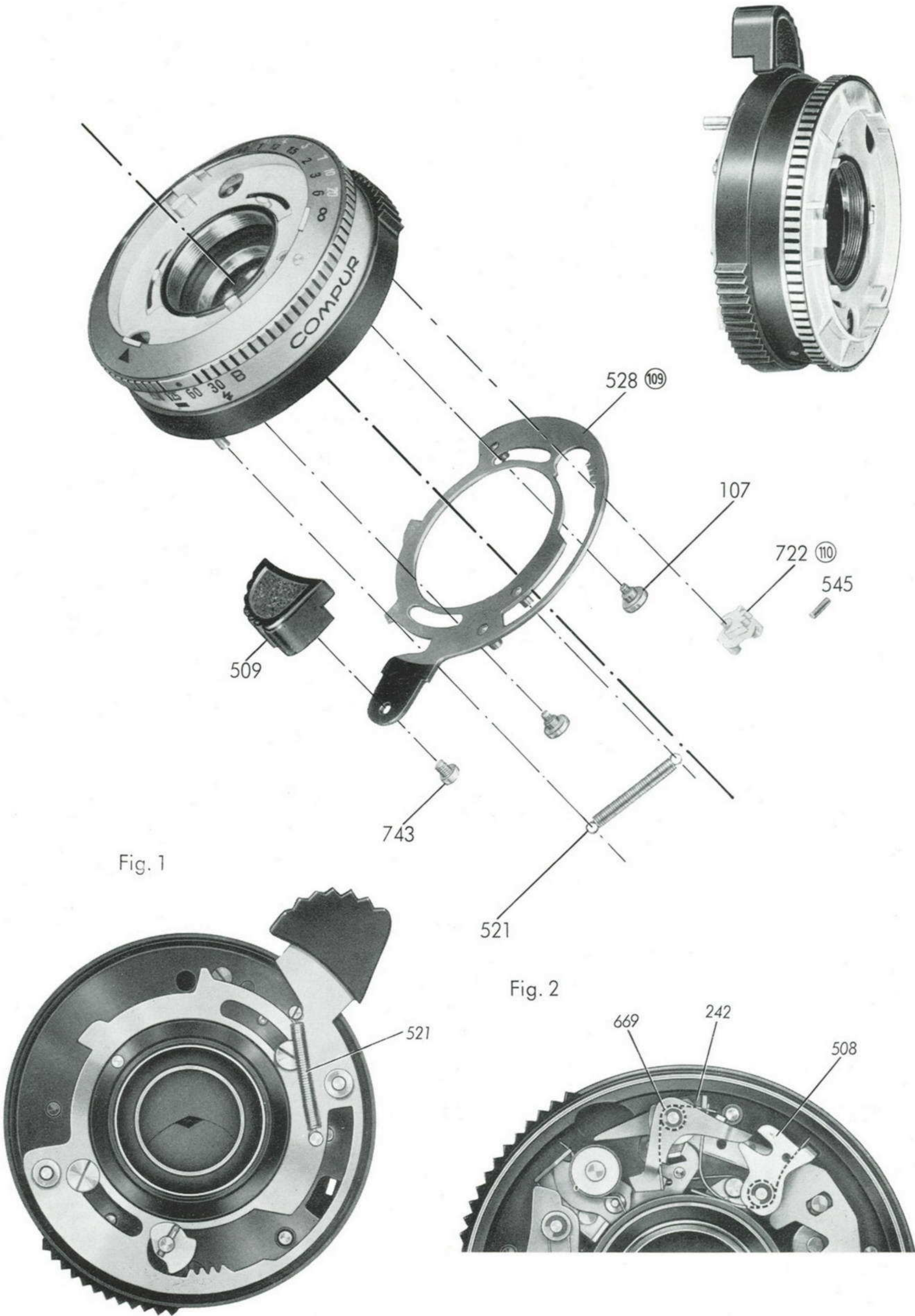


COMPUR 000-X
Selbstspannverschluß
single action shutter

CN-1916-001
Tafel 1

Siehe auch CN-1915-001

See CN-1915-001



Compur Shutter Repair Manual

Section 5

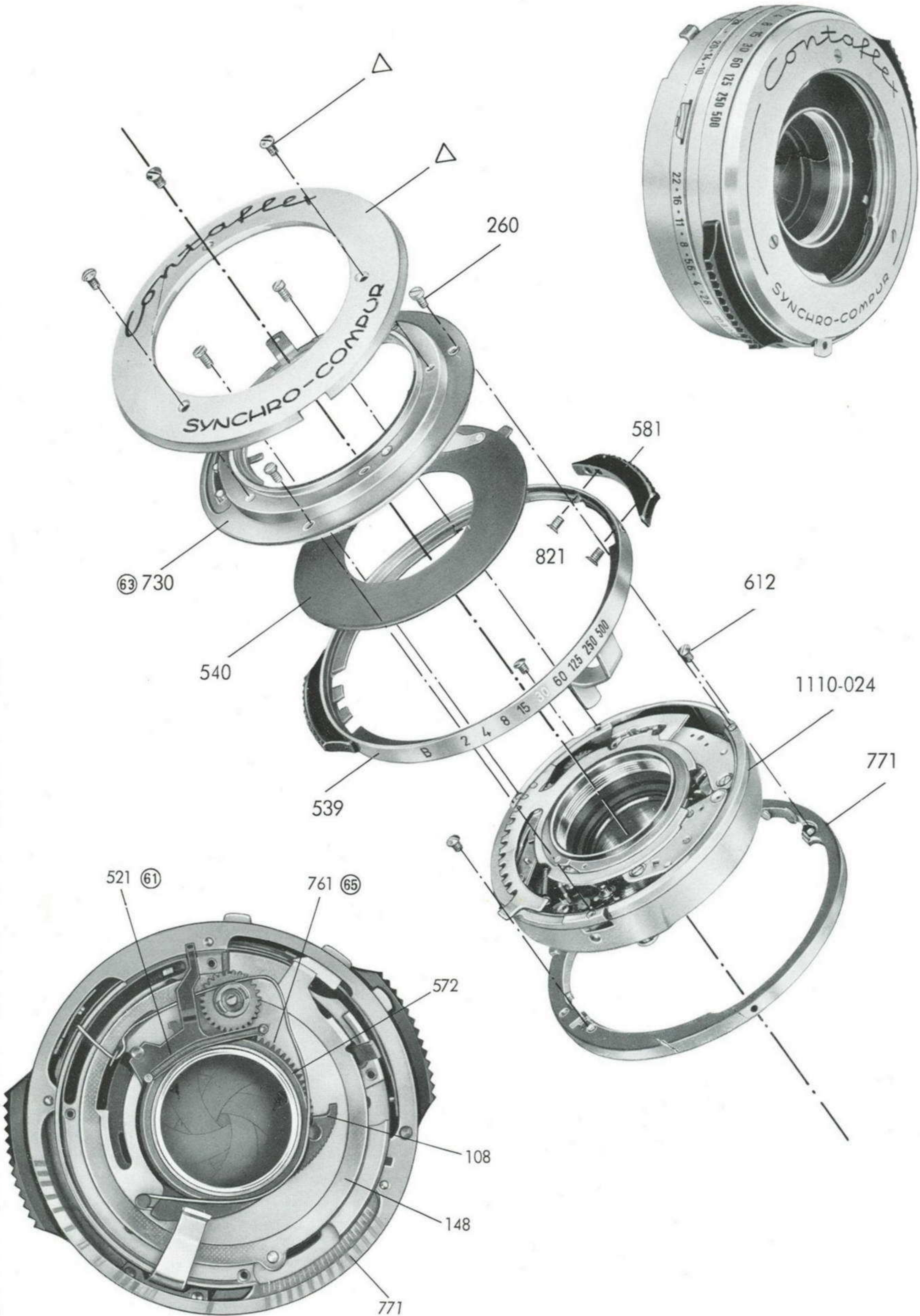
Illustrations for special shutters

SYNCHRO-COMPUR 00-MXV

Spezialverschluß für Fa. Zeiß Ikon AG, Stuttgart
Special Shutter for Messrs. Zeiss Ikon AG., Stuttgart

CS 1110-556

Tafel/Plate 1



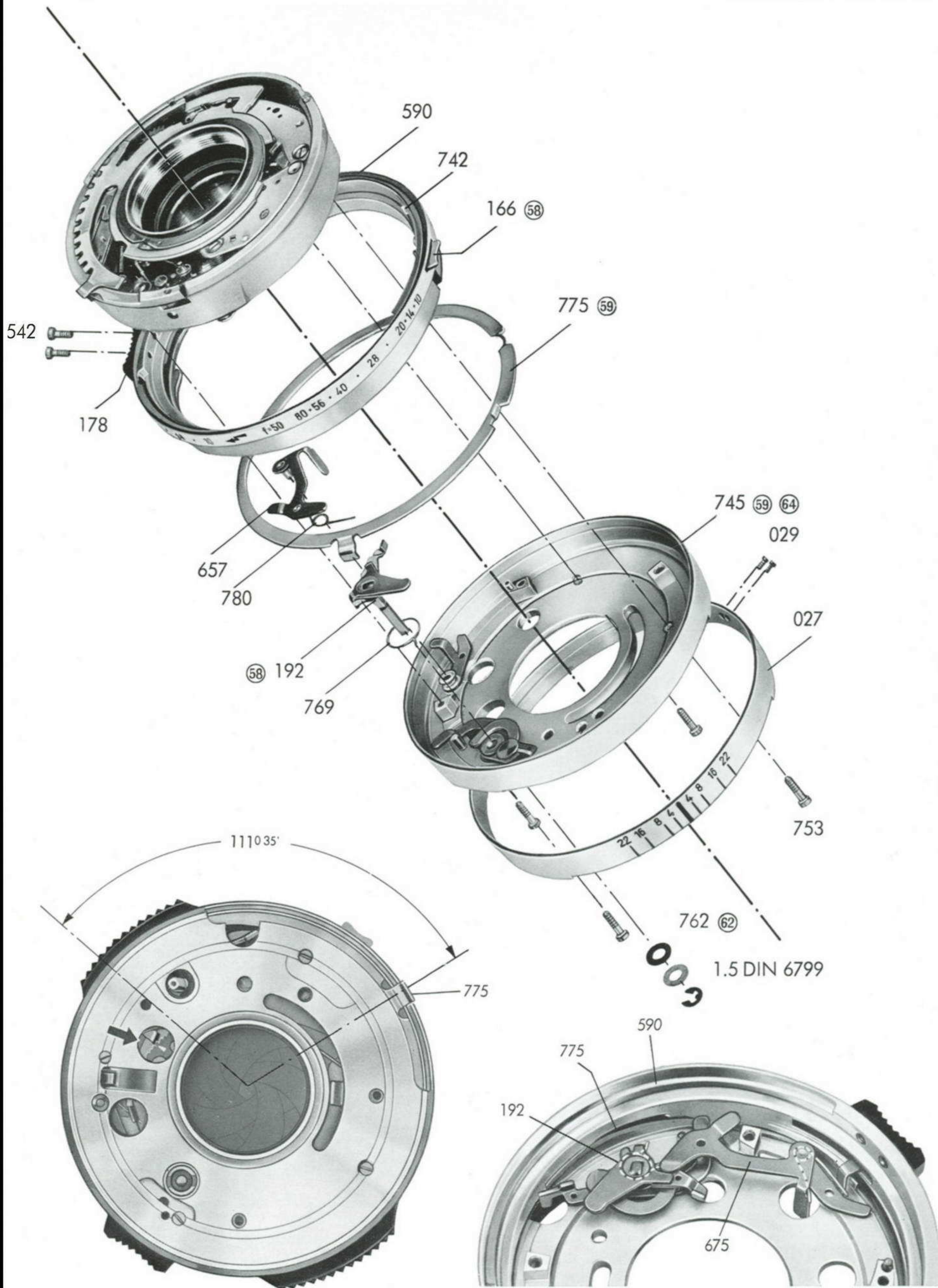
COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 00-MXV

Spezialverschluß Fa. Zeiss Ikon AG, Stuttgart
Special Shutter for Messrs. Zeiss-Ikon AG., Stuttgart

CS 1110-556

Tafel } 2
Plate }



COMPUR-WERK MÜNCHEN

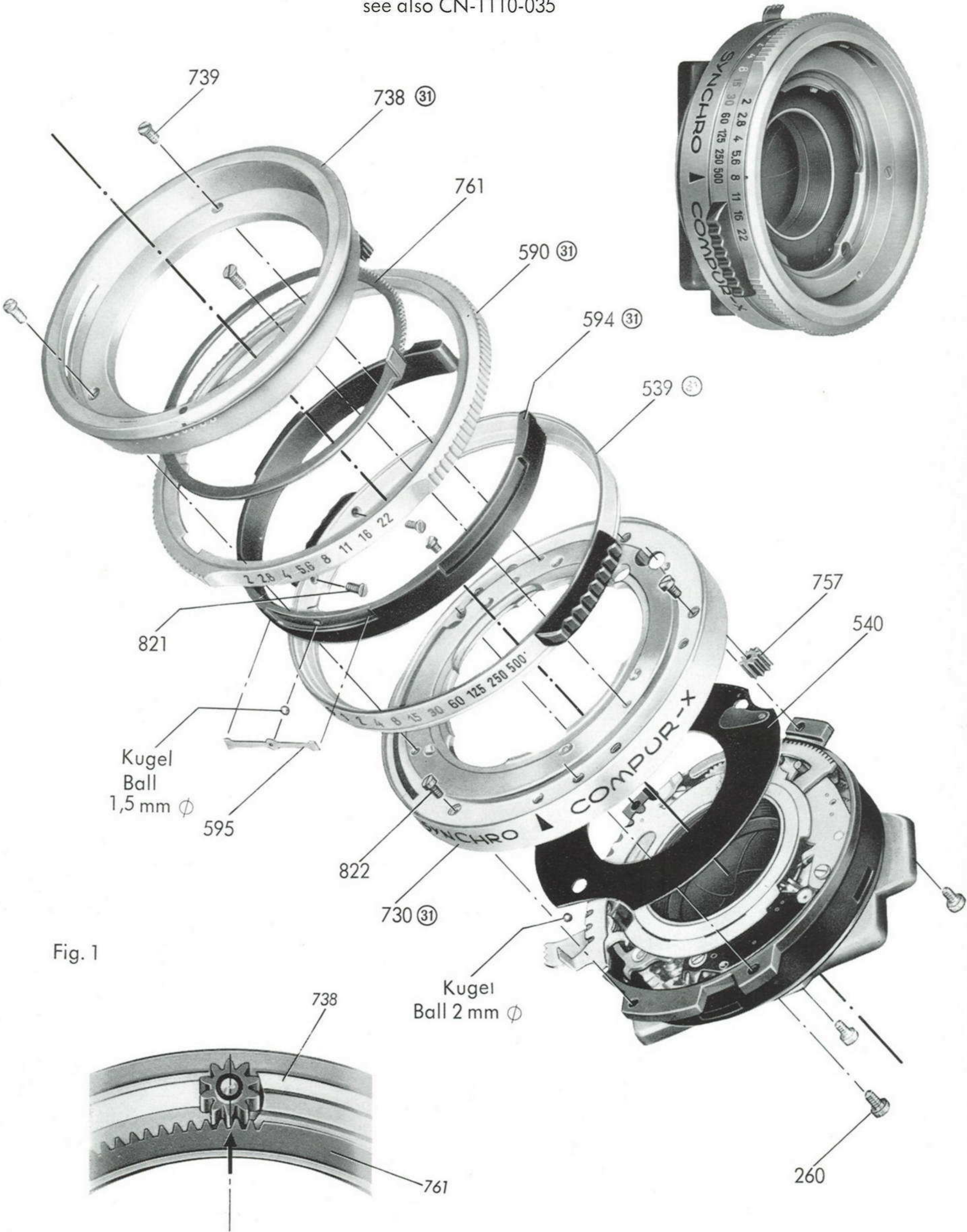
SYNCHRO-COMPUR X-00-XV

Weit-Reflex-Spezial für Fa. Voigtländer Braunschweig
Wide-reflex-special for Messrs. Voigtländer Braunschweig

CS-1112-455

Tafel 1

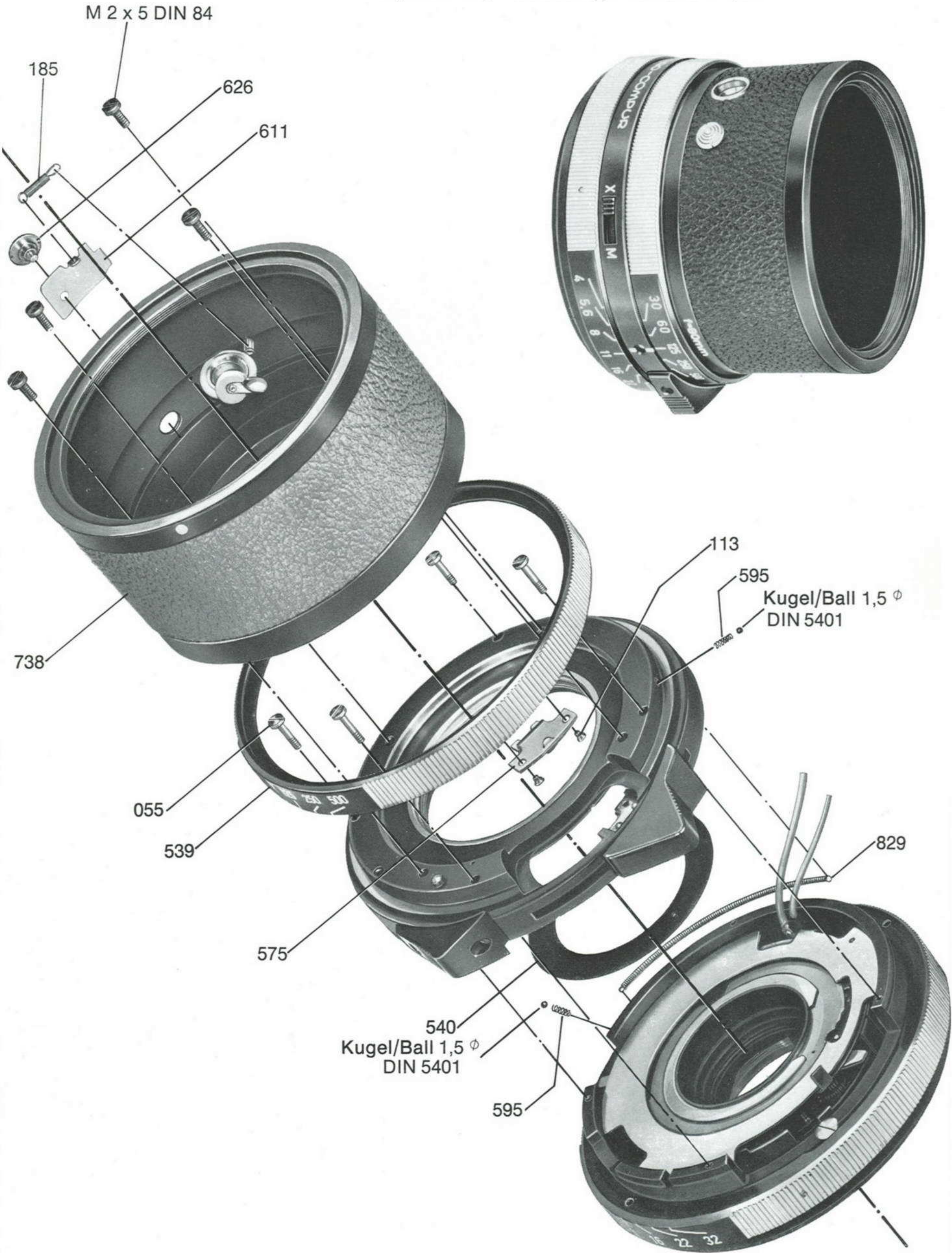
Siehe auch CN-1110-035
see also CN-1110-035



SYNCHRO-COMPUR 0-MX
Spezial

CS-1210-277
Tafel 1
Plate 1

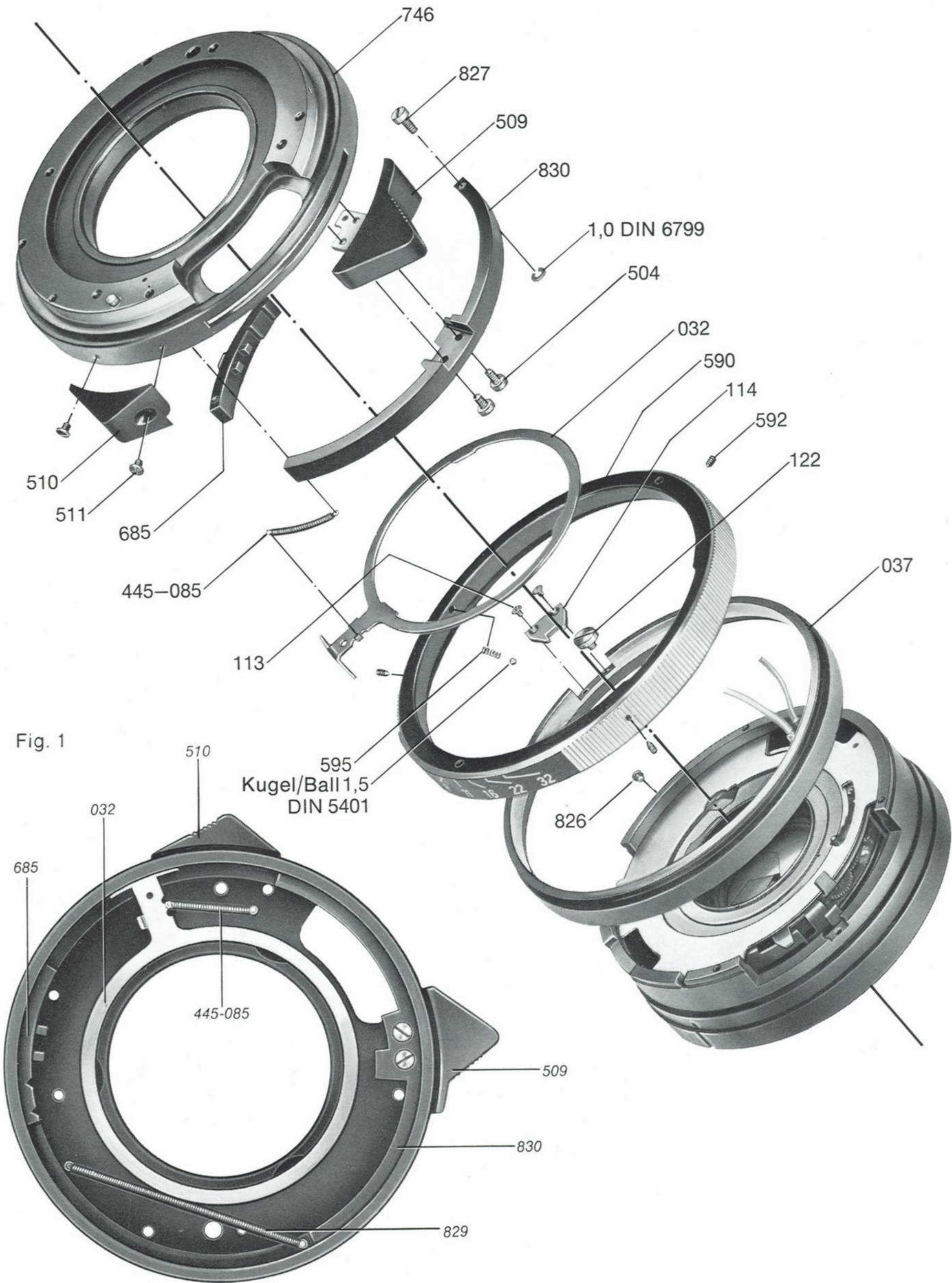
Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 0-MX
Spezial

CS-1210-277
Tafel 2
Plate 2

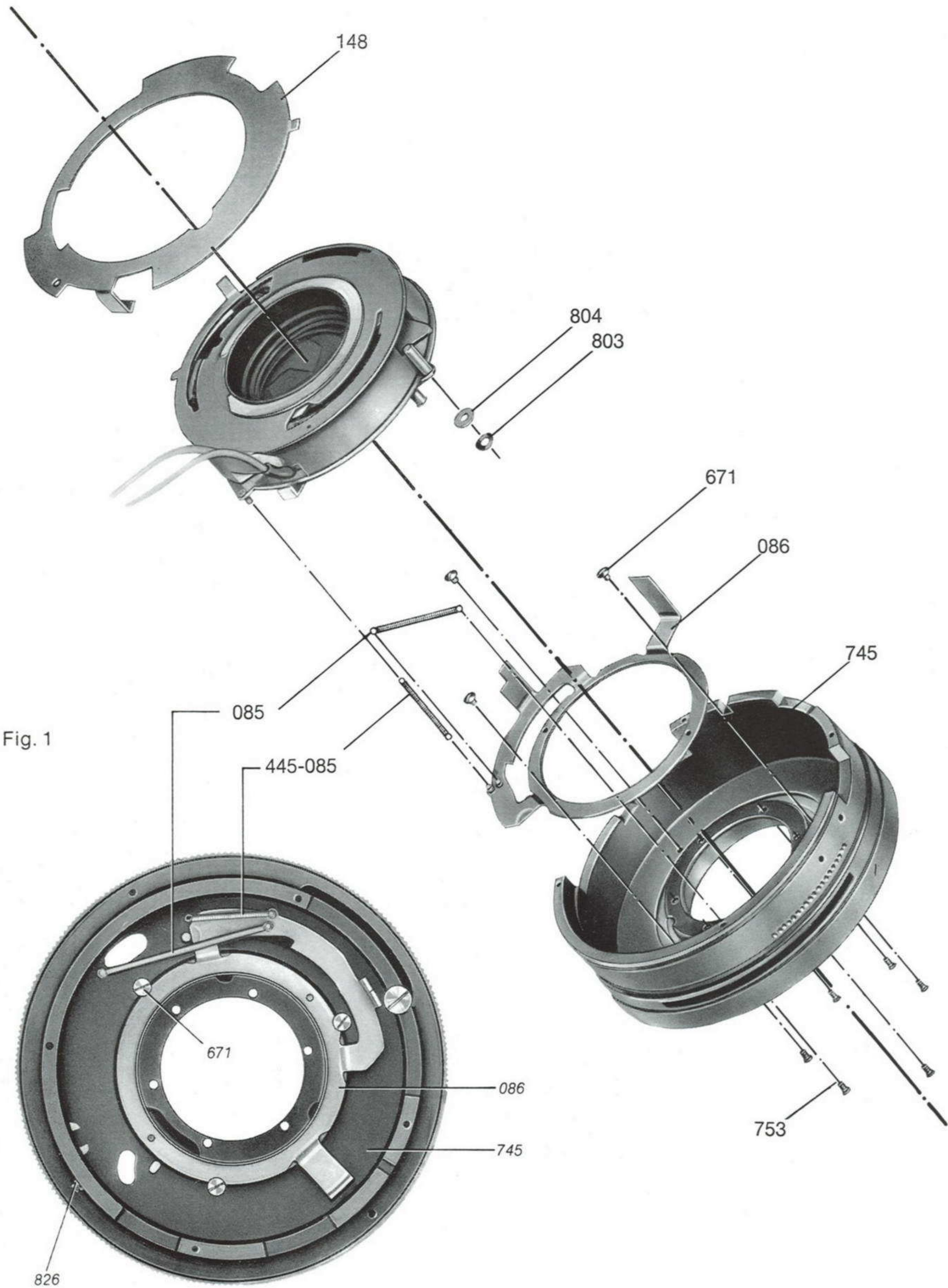
Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 0-MX
Spezial

CS-1210-277
Tafel 3
Plate 3

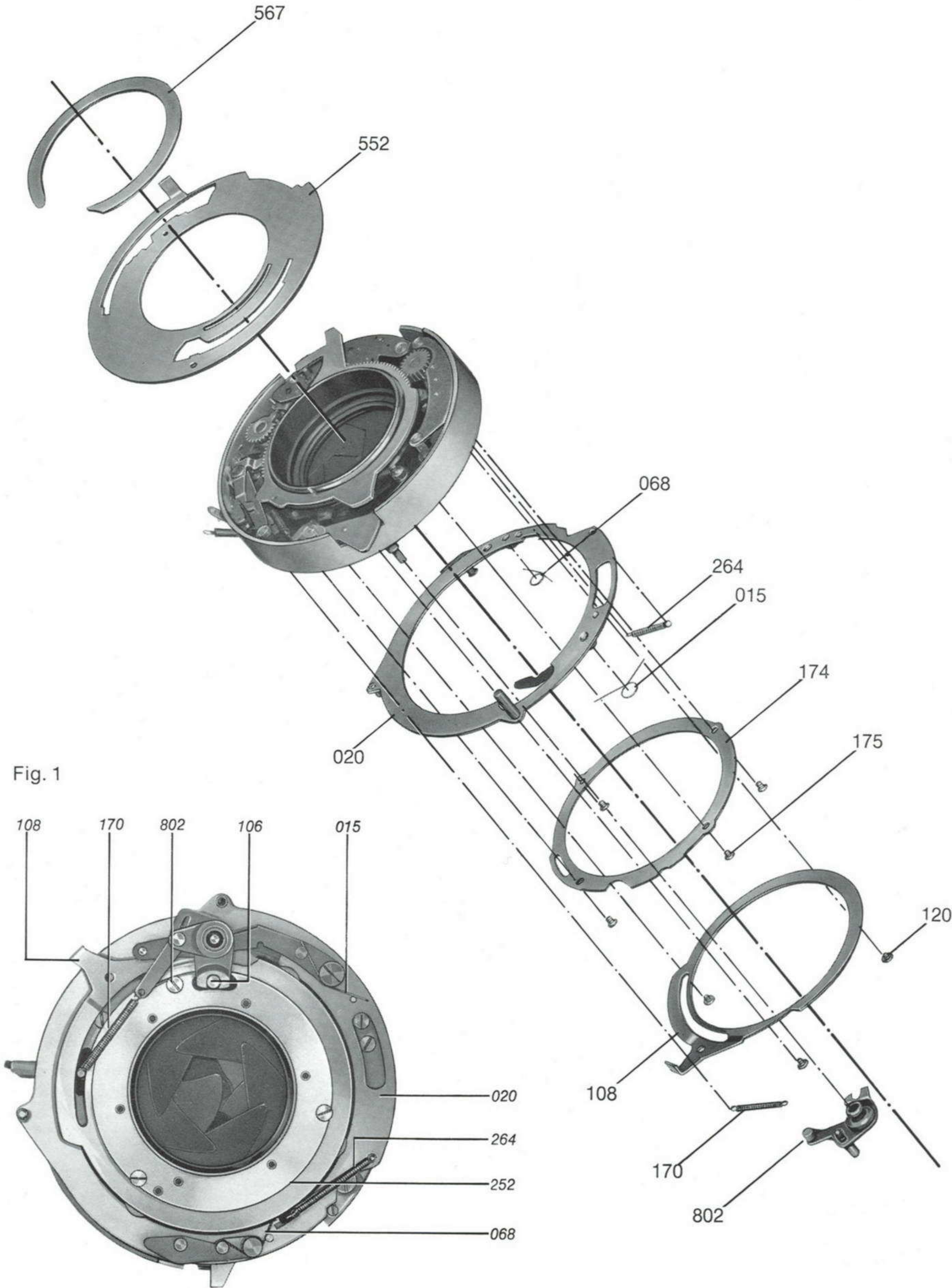
Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 0-MX
Spezial

CS-1210-277
Tafel 4
Plate 4

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MX
Spezial

CS-1210-277
Tafel 5
Plate 5

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

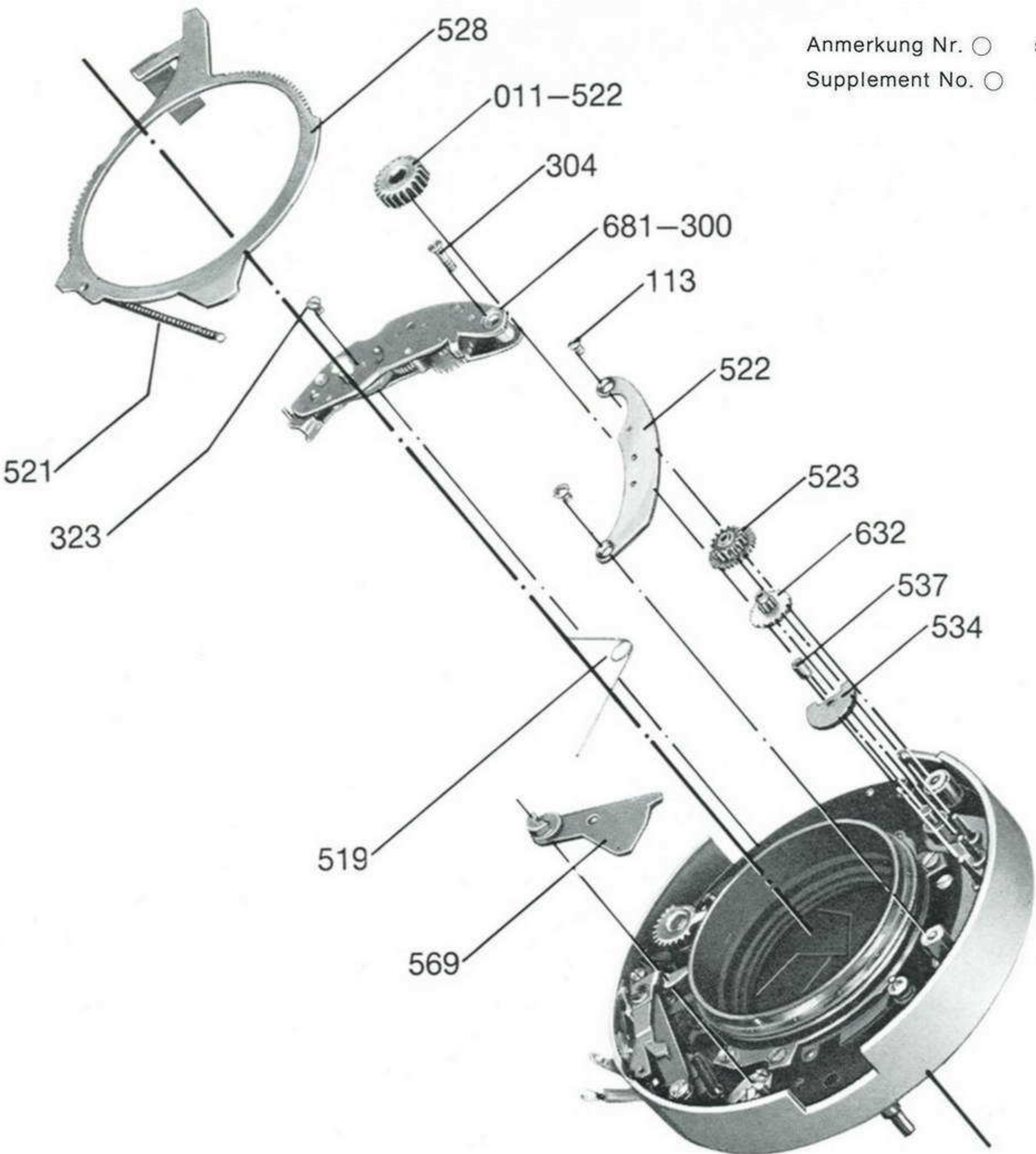


Fig. 1

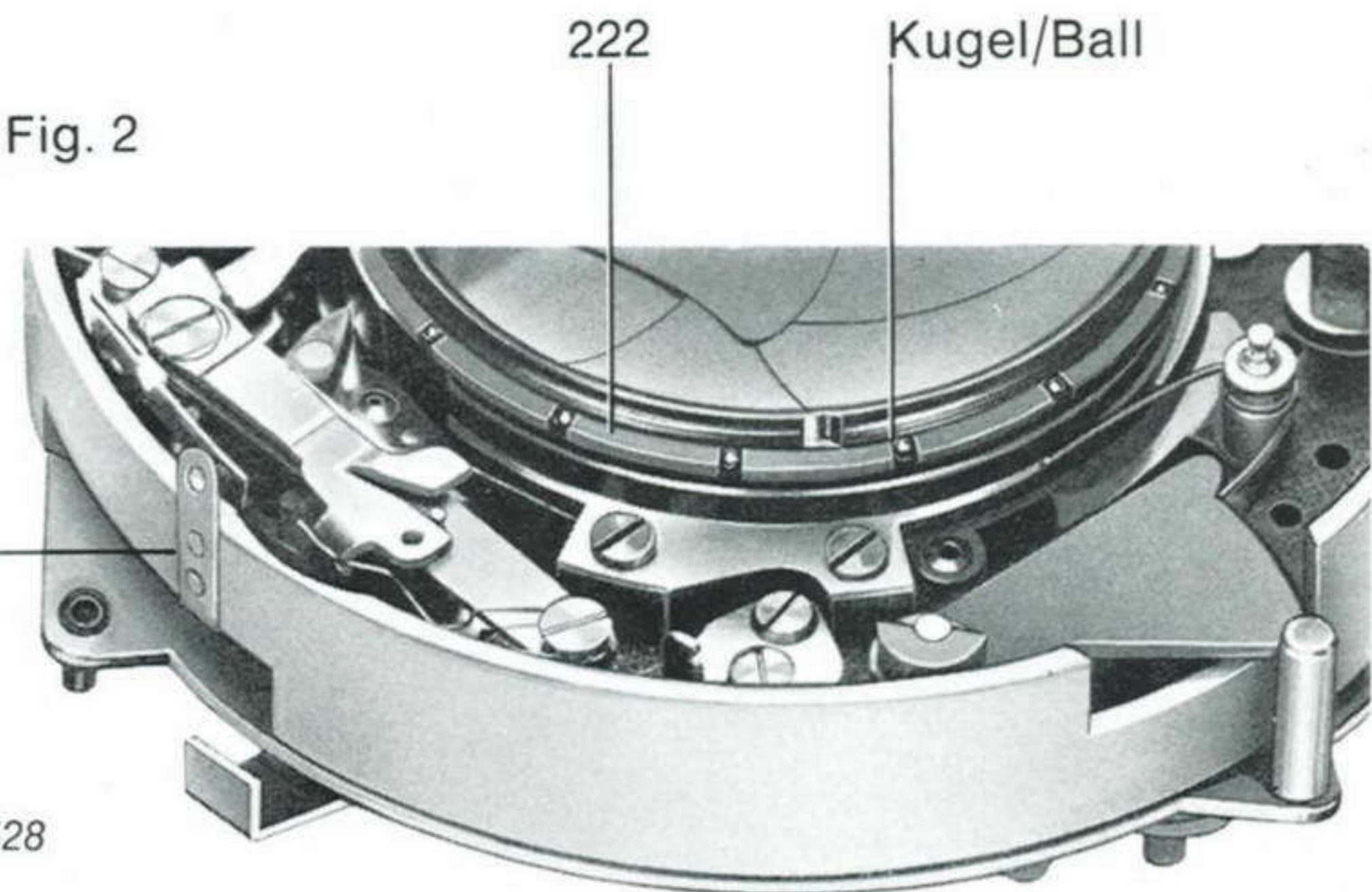


Fig. 2

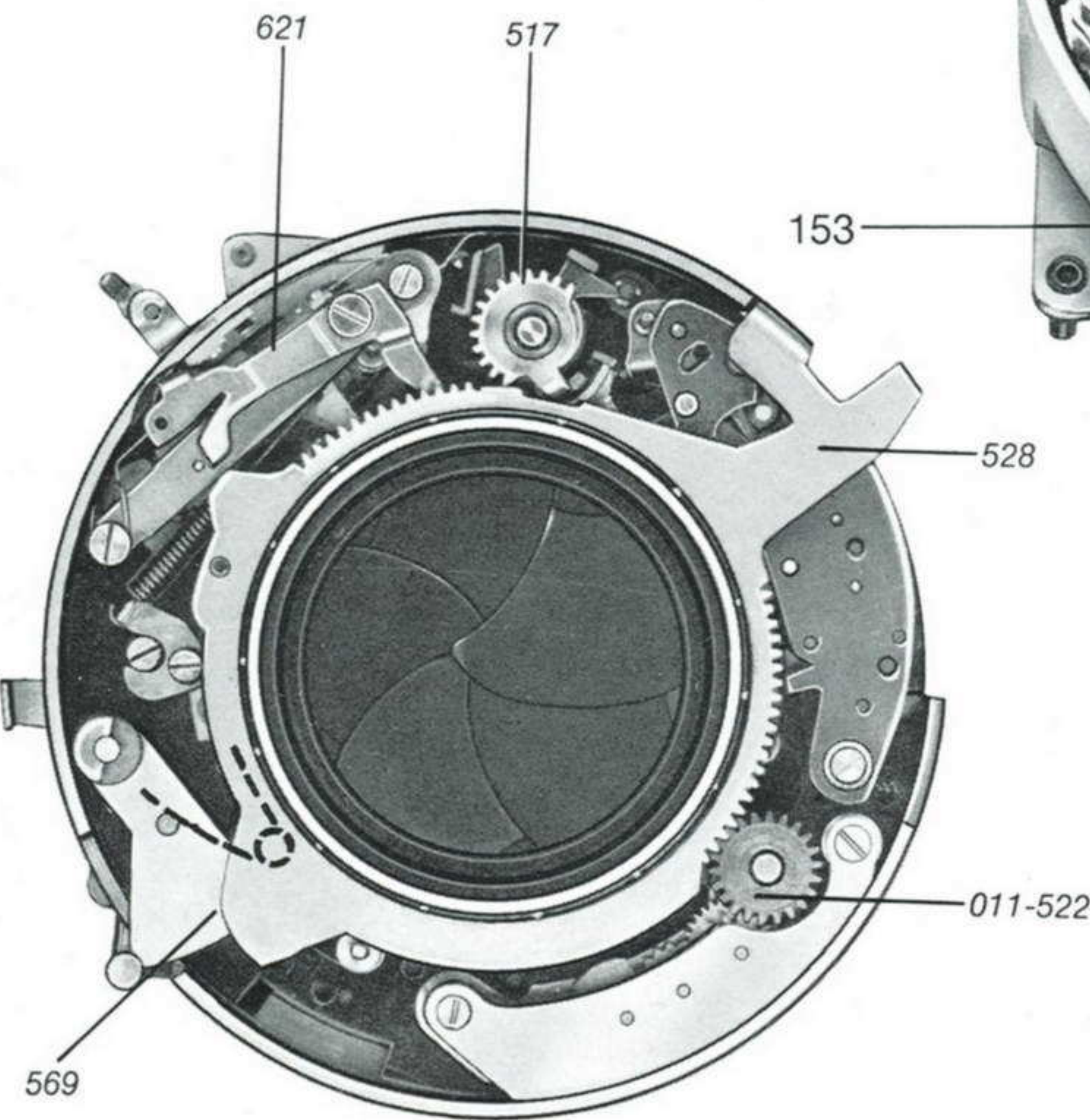
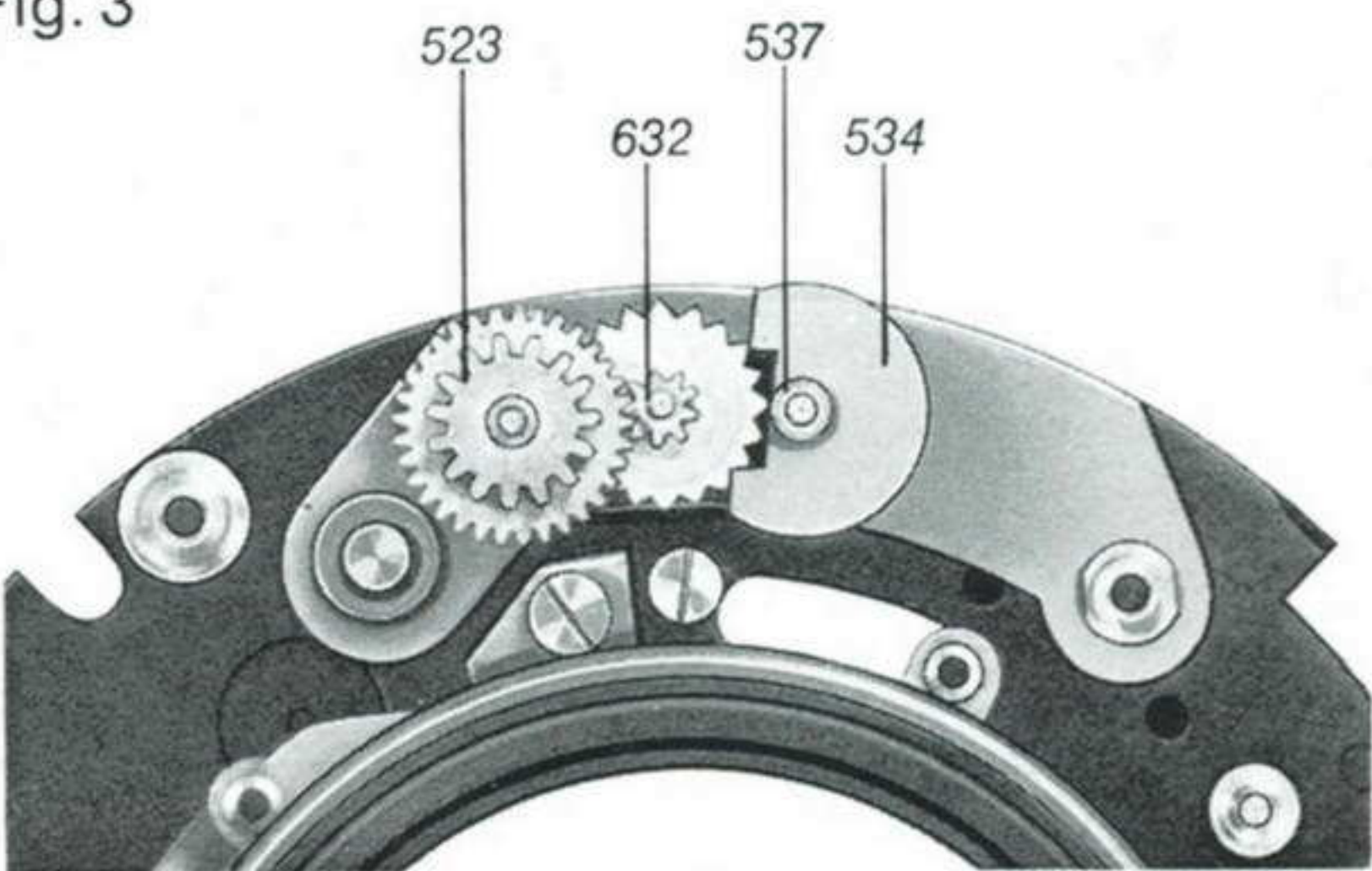


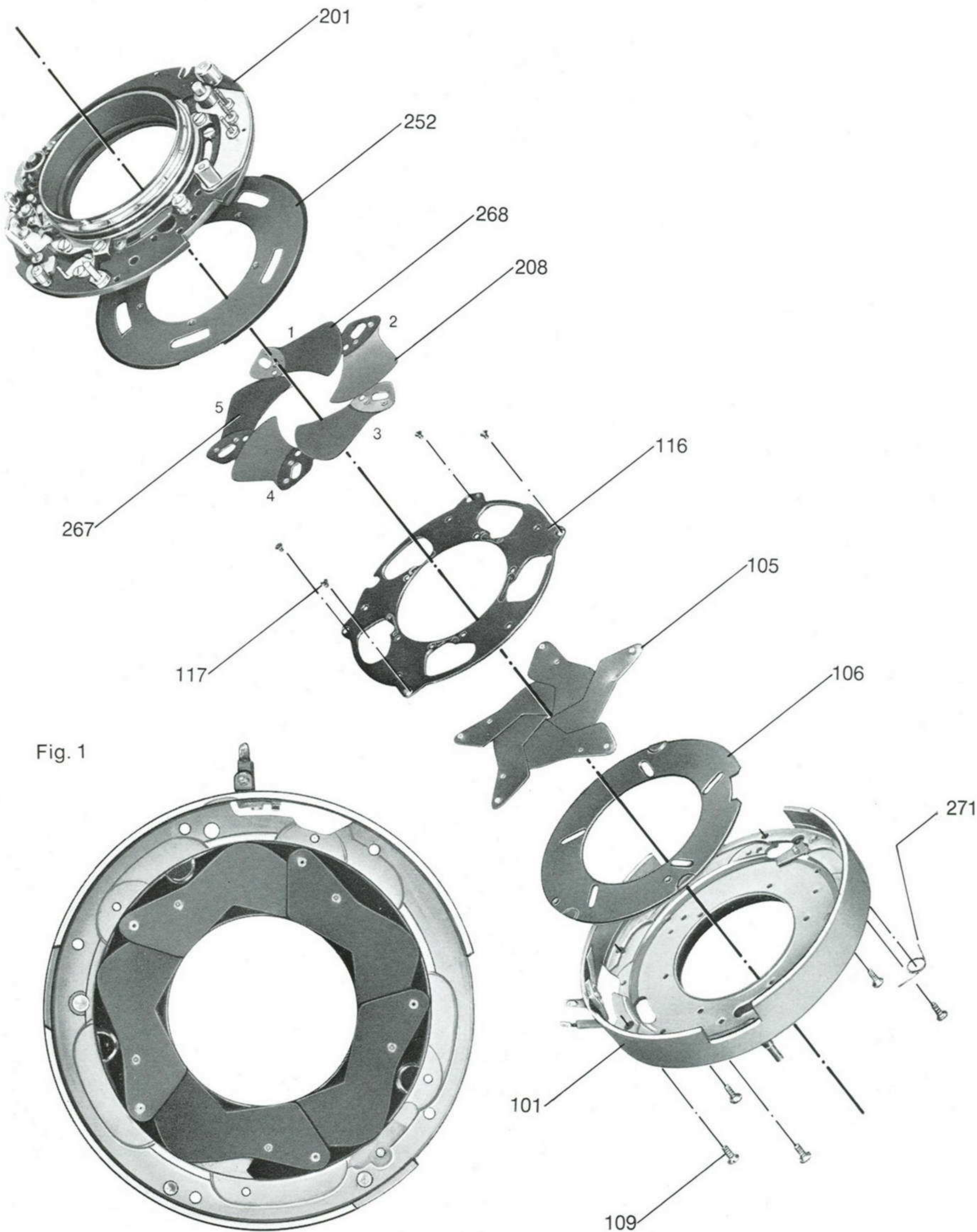
Fig. 3



SYNCHRO-COMPUR 0-MX
Spezial

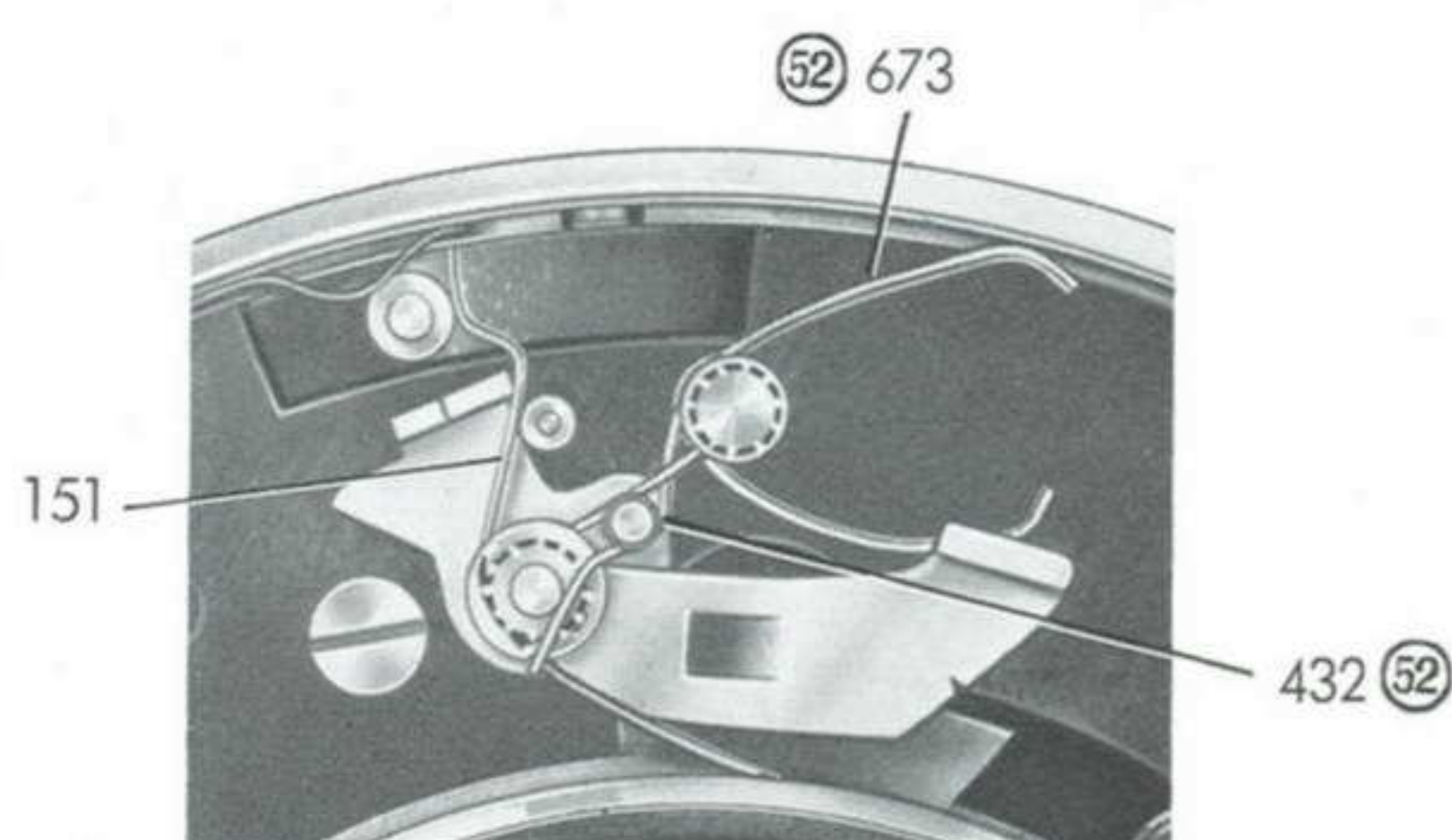
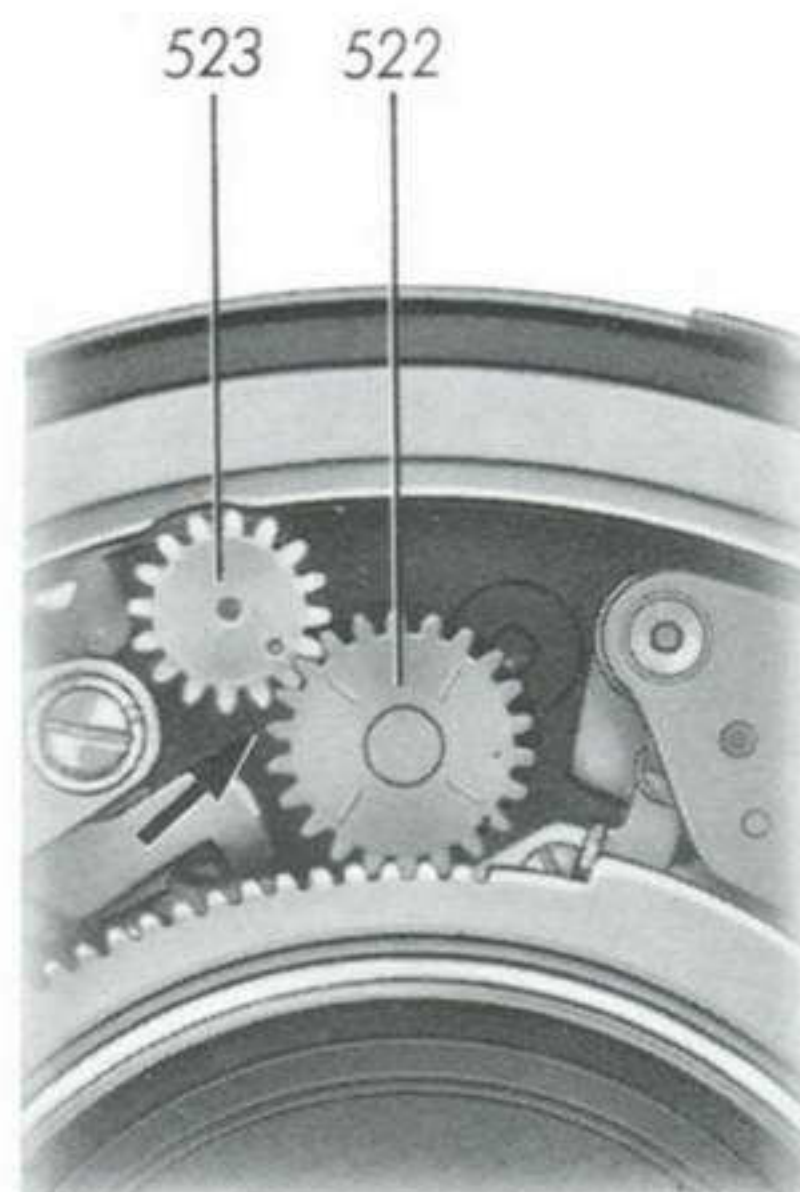
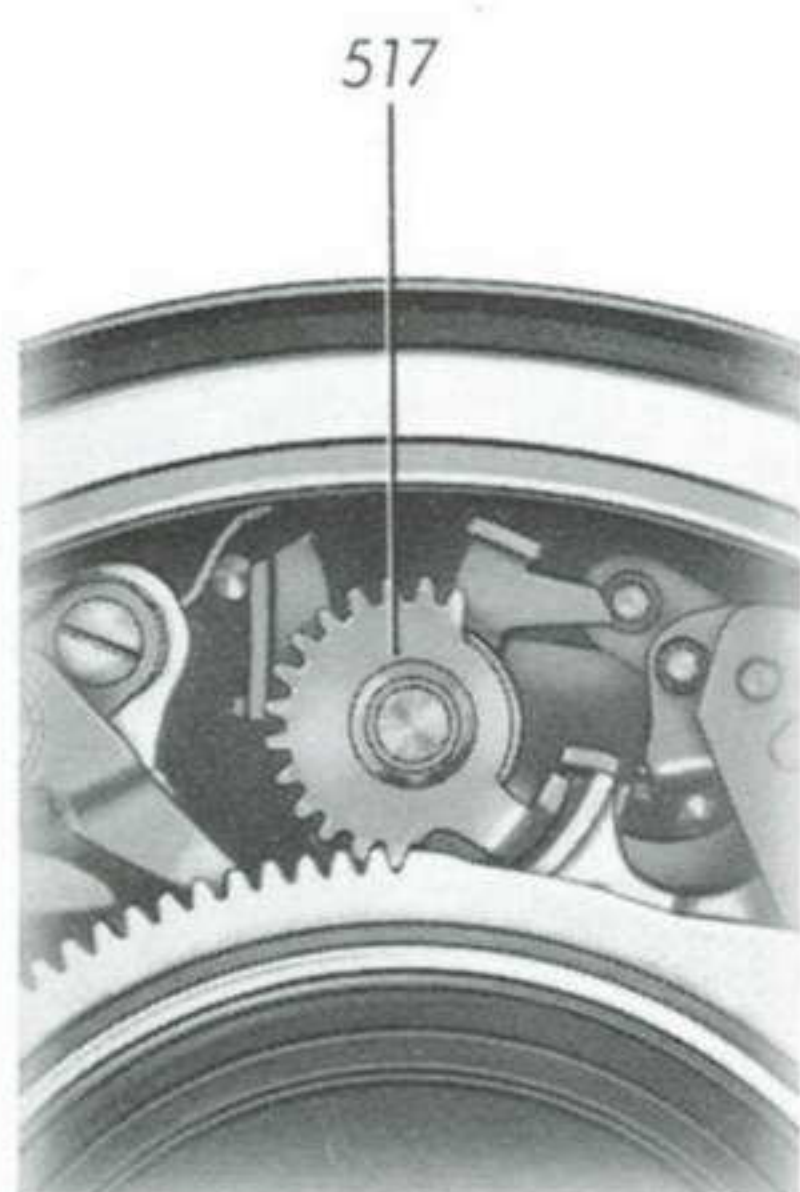
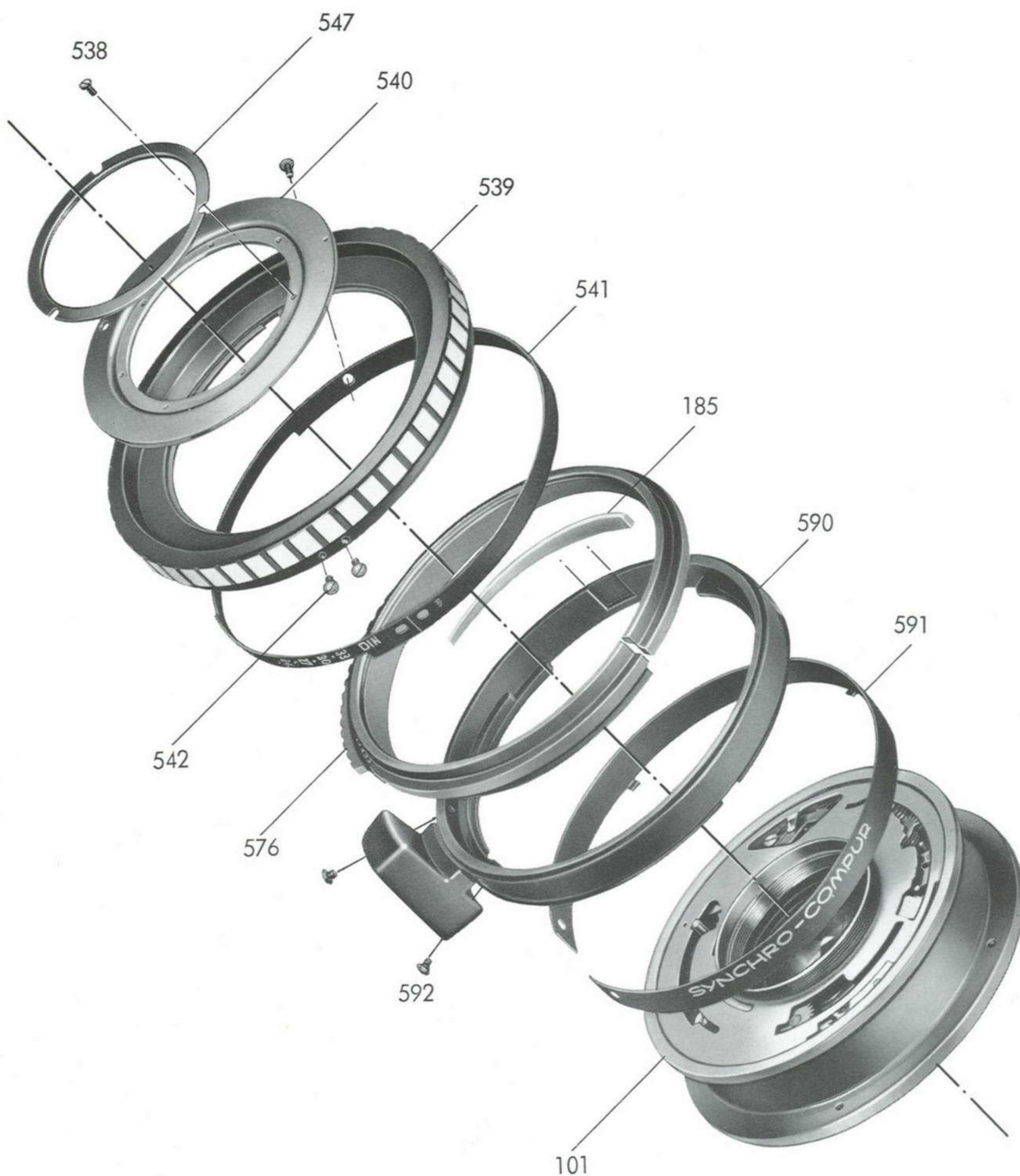
CS-1210-277
Tafel 6
Plate 6

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



SYNCHRO-COMPUR 0-MXV
 Spezialverschluß für Fa. Linhof, München
 Special Shutter for Messrs. Linhof, Munich

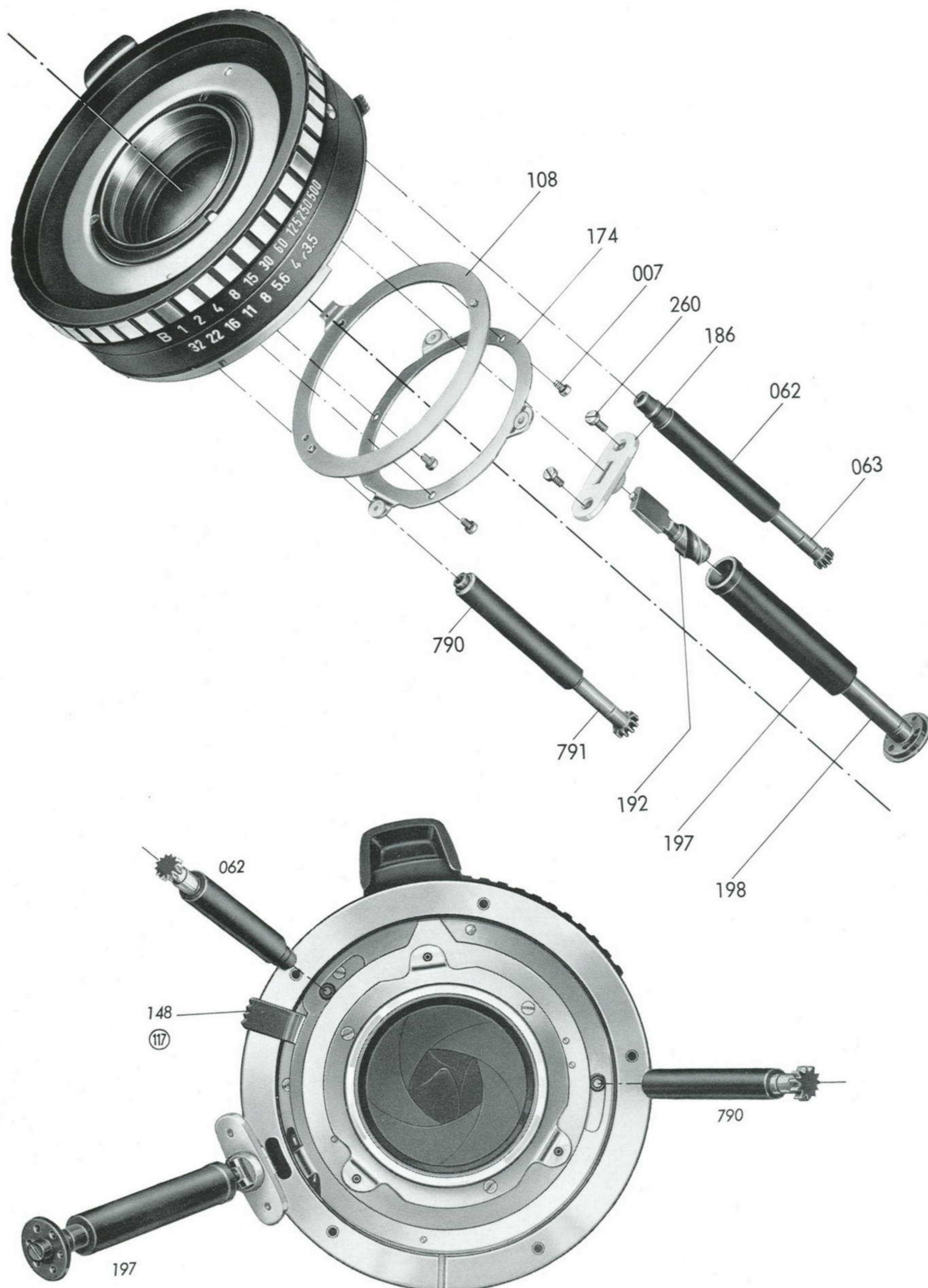
CS-1210-604
 Tafel / Plate 1



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MXV
 Spezialverschluß für Firma Linhof, München
 Special shutter for Messrs. Linhof, Munich

CS-1210-604
 Tafel 2



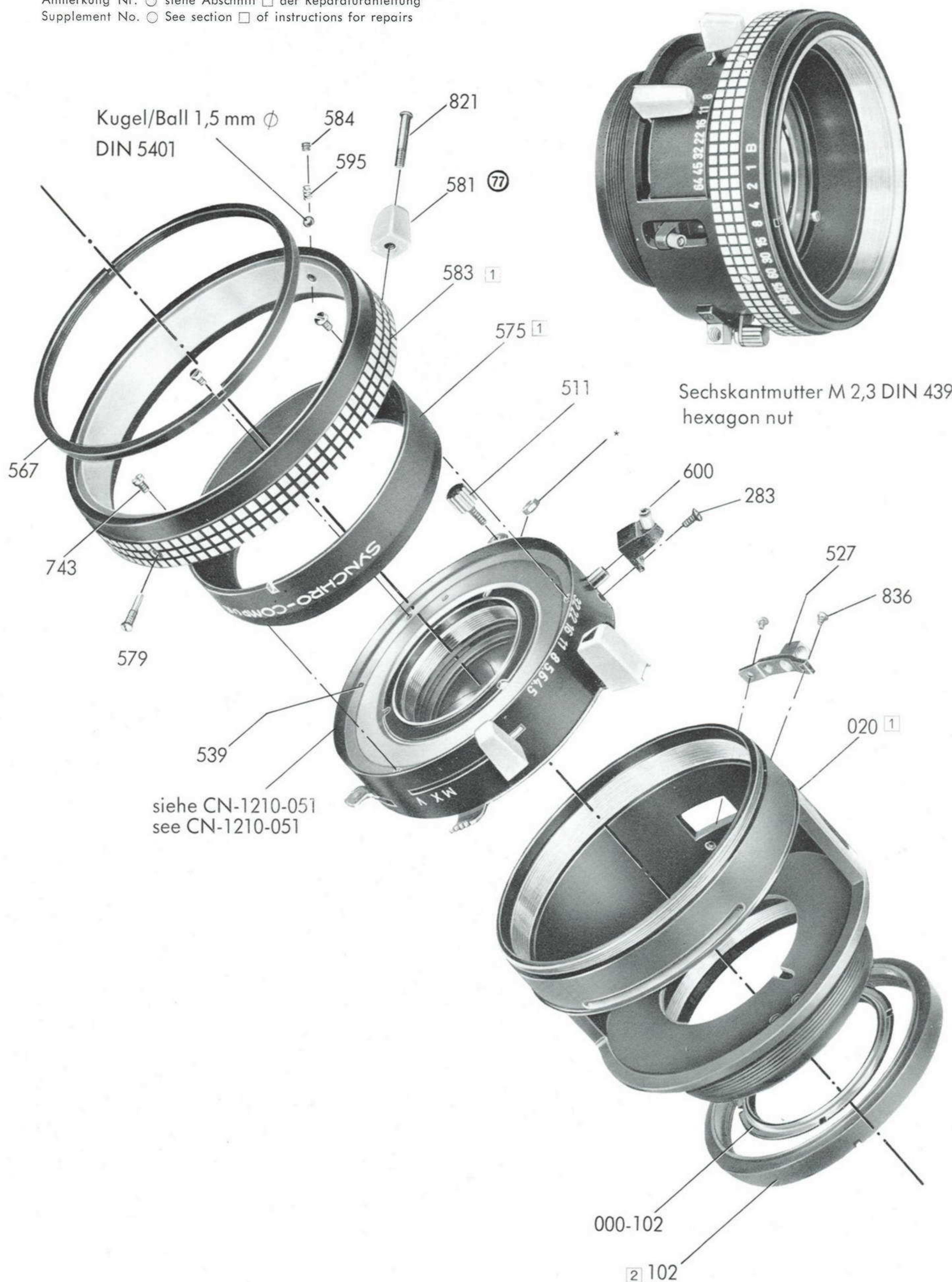
COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR 0-MXV
 mit Sektorenöffnungseinrichtung und Tragfassung
 with blade-opening mechanism and reinforced mount

CS-1210-660

Tafel 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
 Supplement No. ○ See section □ of instructions for repairs



COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR O-MXV

Spezialverschluß für Fa. Linhof, München

Special Shutter for Messrs. Linhof, Munich

CS-1210-671

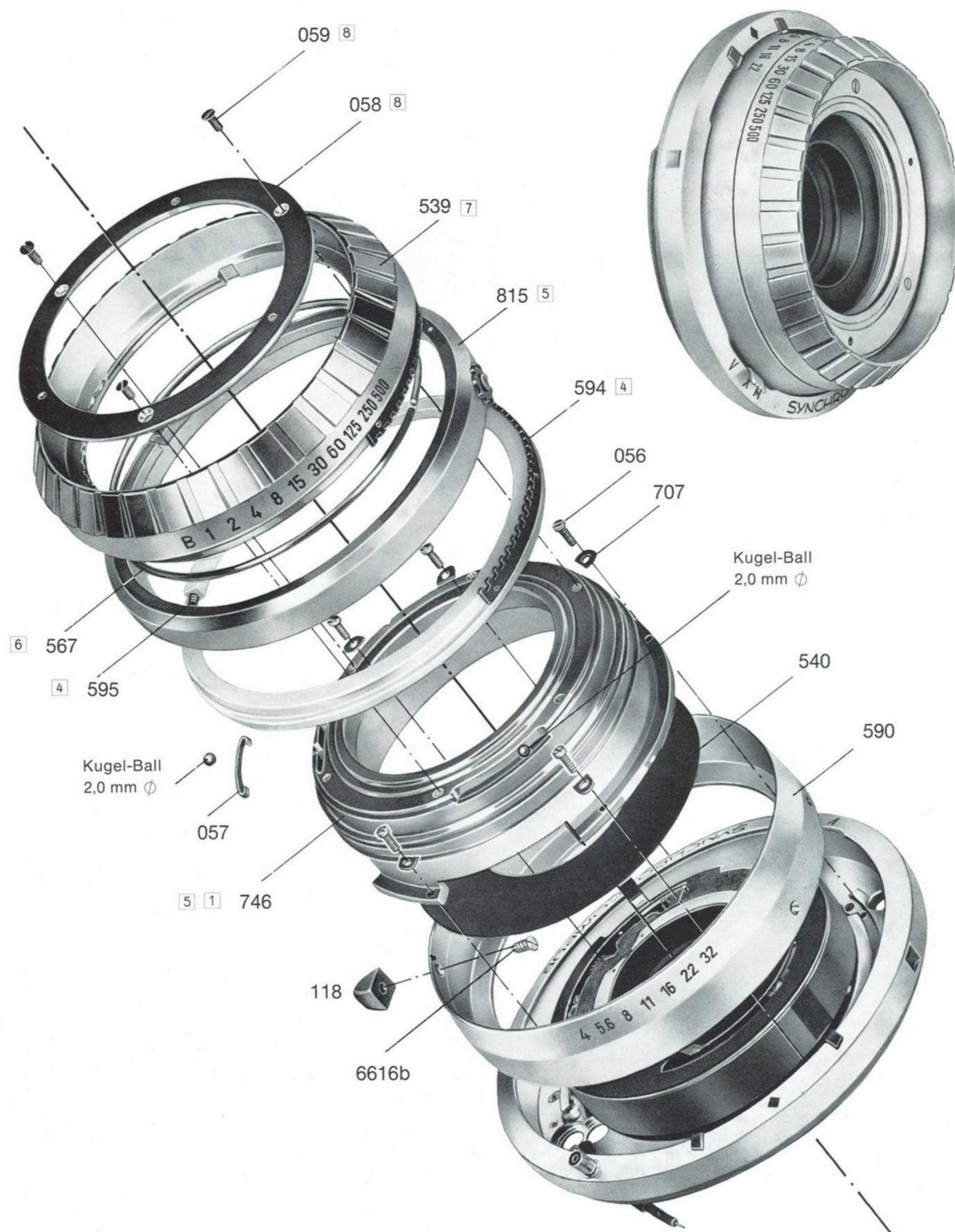
Tafel 1

Plate 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung

Supplement No. ○ See section □ of instructions for repairs

Abbildung der übrigen Teile siehe CN-1110-000 / The other parts see CN-1110-000

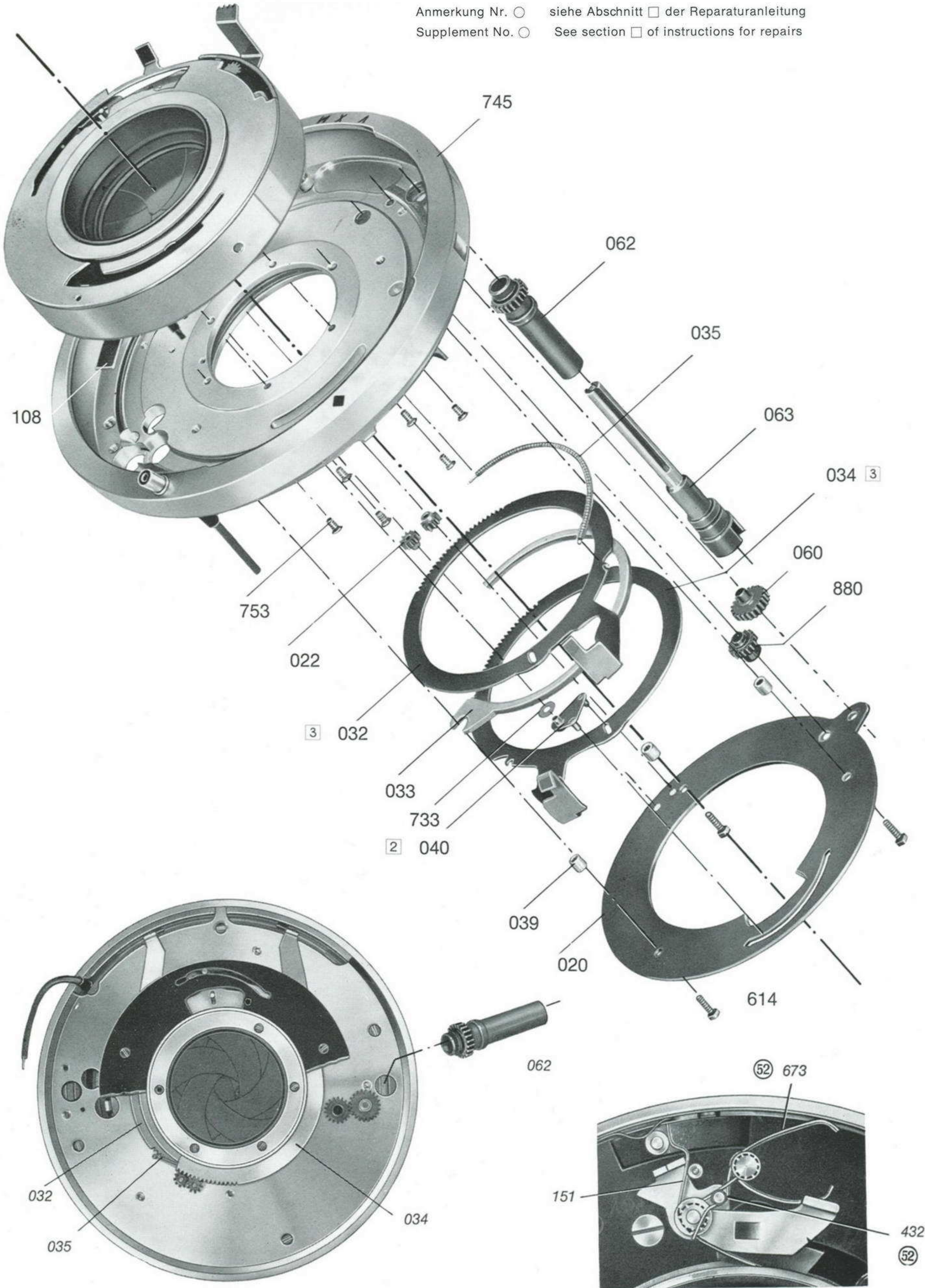


COMPUR-WERK MÜNCHEN

SYNCHRO-COMPUR O-MXV
Spezialverschluß für Fa. Linhof, München
Special Shutter for Messrs. Linhof, Munich

CS-1210-671
Tafel 2
Plate 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs

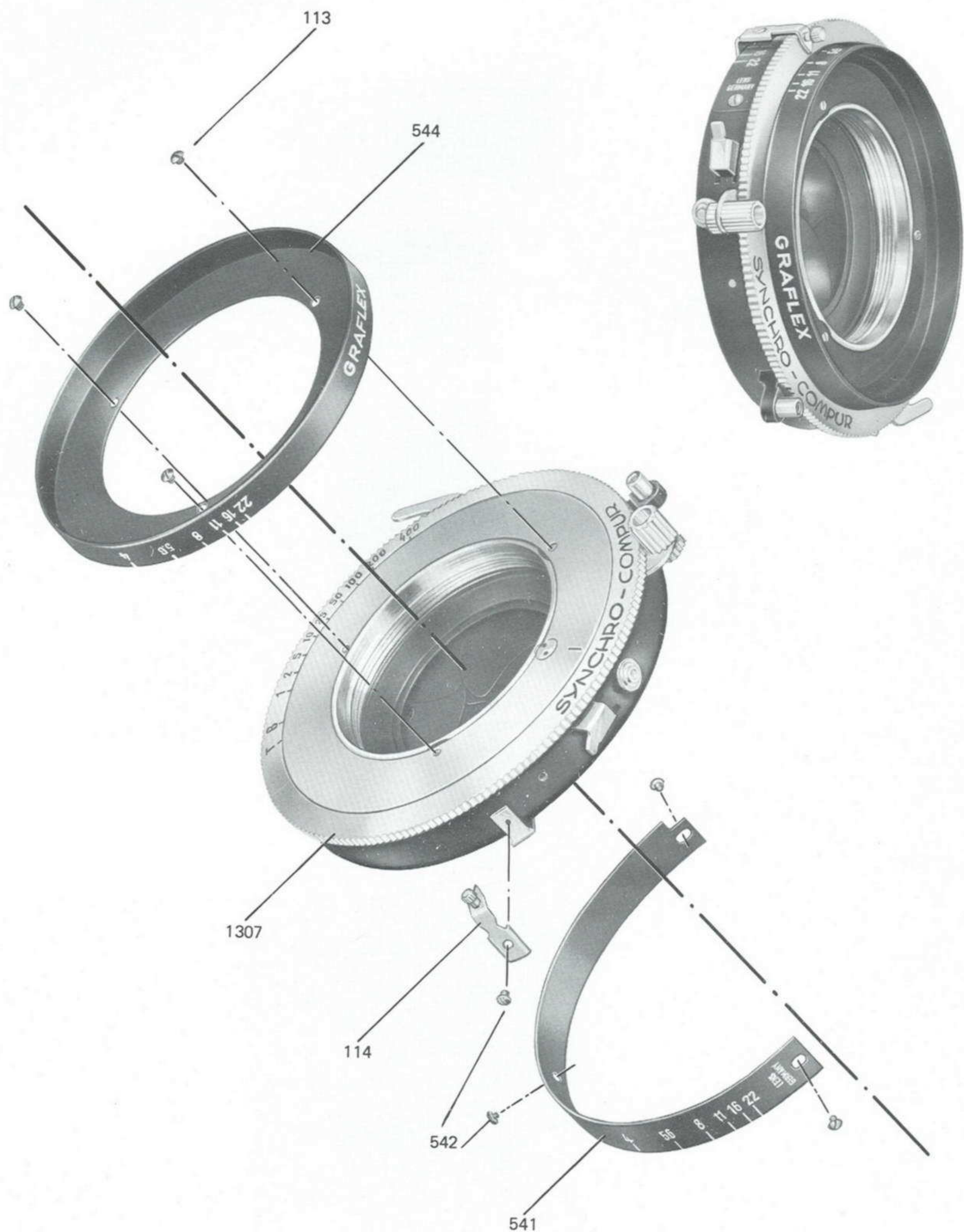


SYNCHRO-COMPUR 1-MX

Spezialverschluß für Fa. Graflex, Rochester, USA
Special Shutter for Messrs. Graflex, Rochester, USA

CS-1307-607

Tafel 1

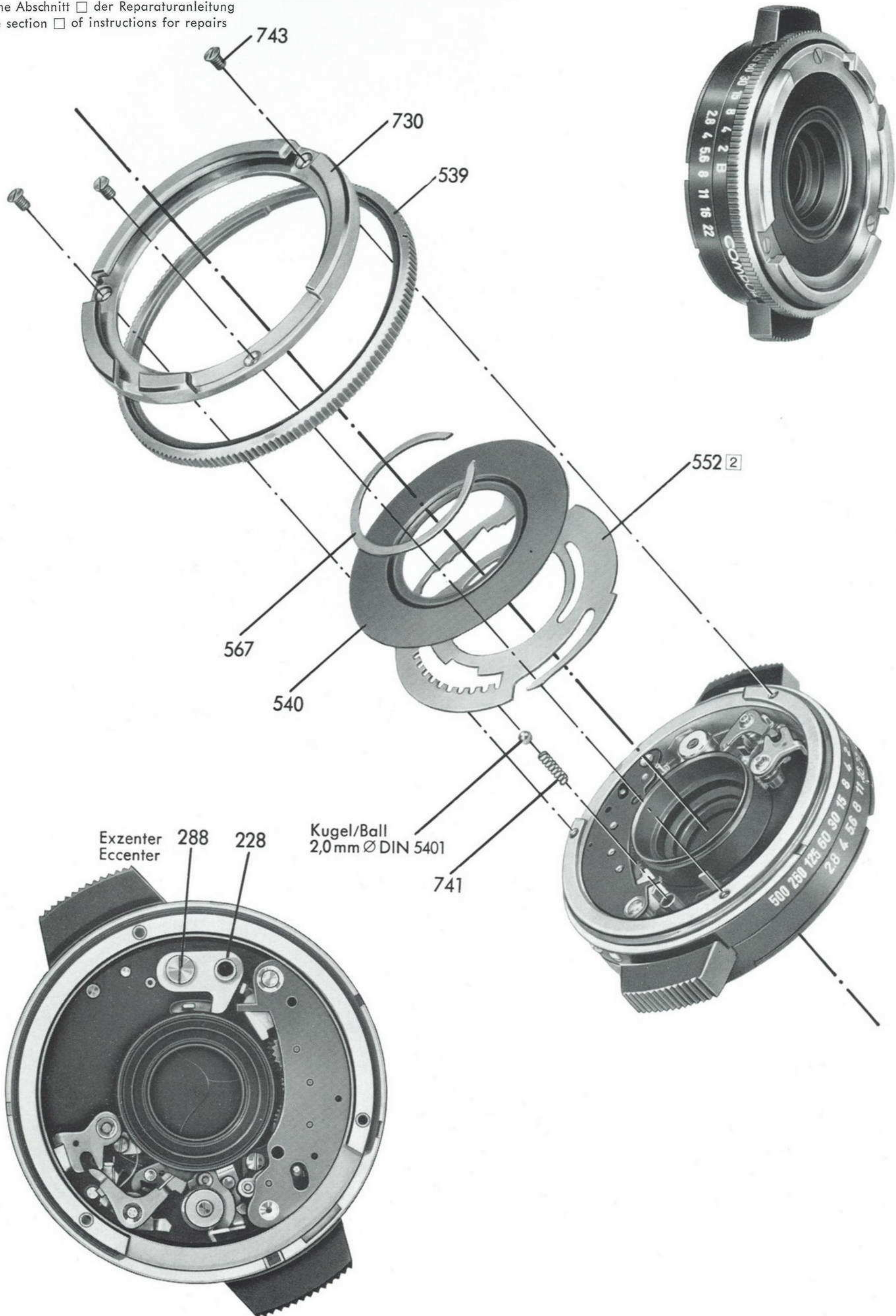


COMPUR-000-X REFLEX
für Firma Rollei-Werke, Braunschweig
for Messrs. Rollei-Werke, Braunschweig

CS-1912-206

Tafel/Plate 1

siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs



COMPUR-WERK MÜNCHEN

COMPUR-000-X Reflex
für Firma Rollei-Werke, Braunschweig
for Messrs. Rollei-Werke, Braunschweig

CS-1912-206
Tafel/Plate 2

siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs

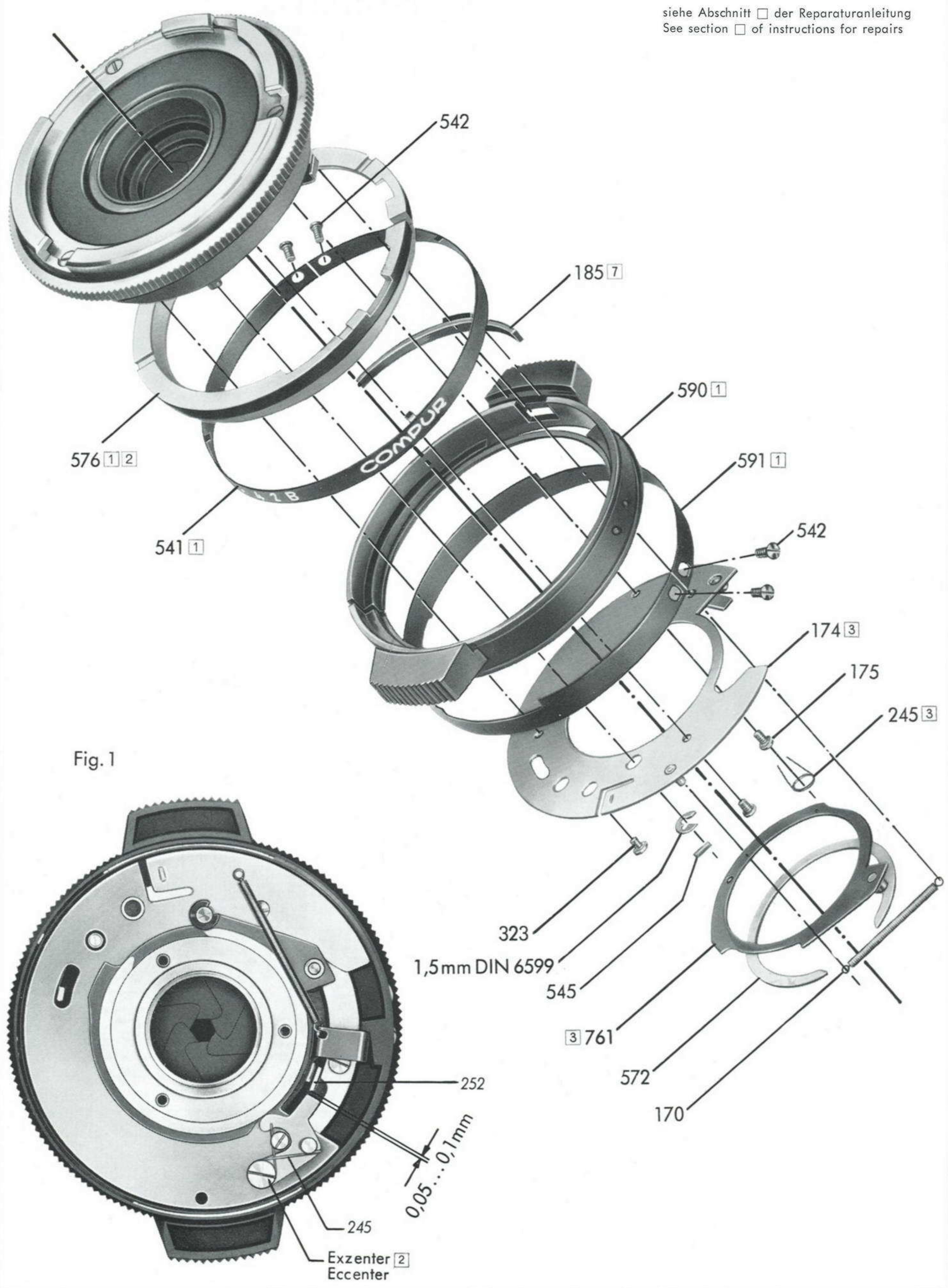


Fig. 1

COMPUR-000-X Reflex
für Firma Rollei-Werke, Braunschweig
for Messrs. Rollei-Werke, Braunschweig

CS-1912-206
Tafel/Plate 3

siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs

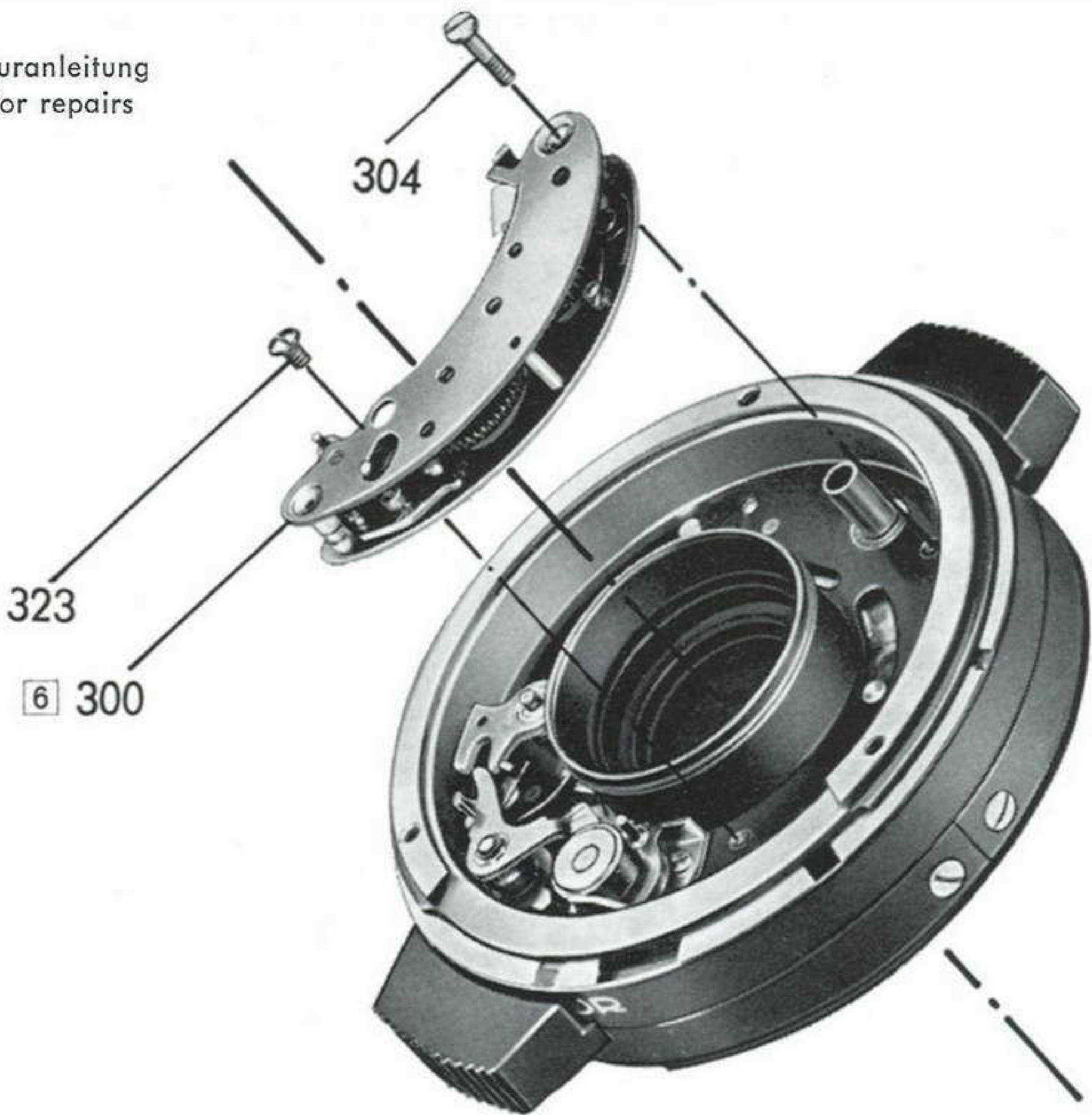


Fig. 1: Zeitjustierung 6
Speed adjustment

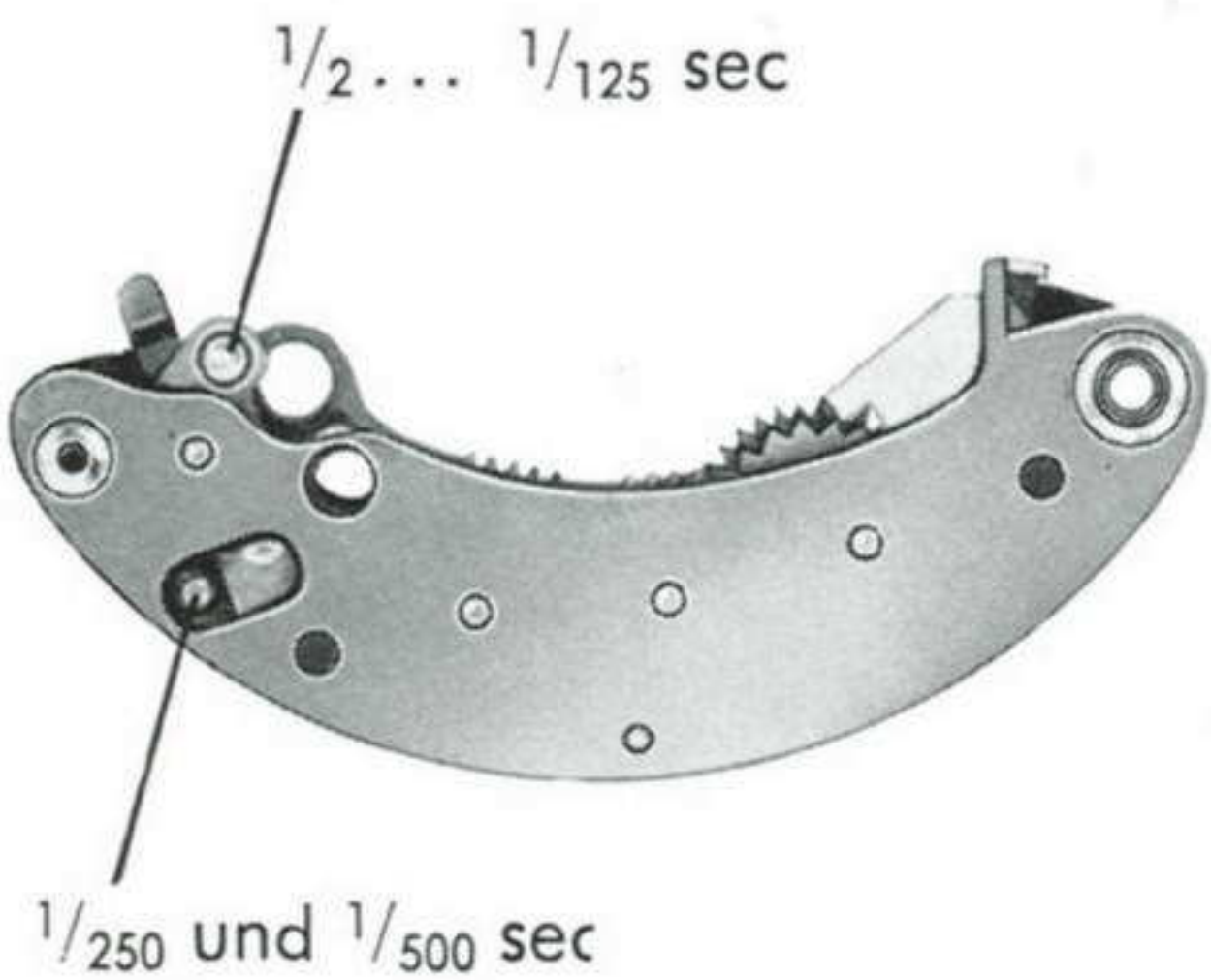


Fig. 2 6

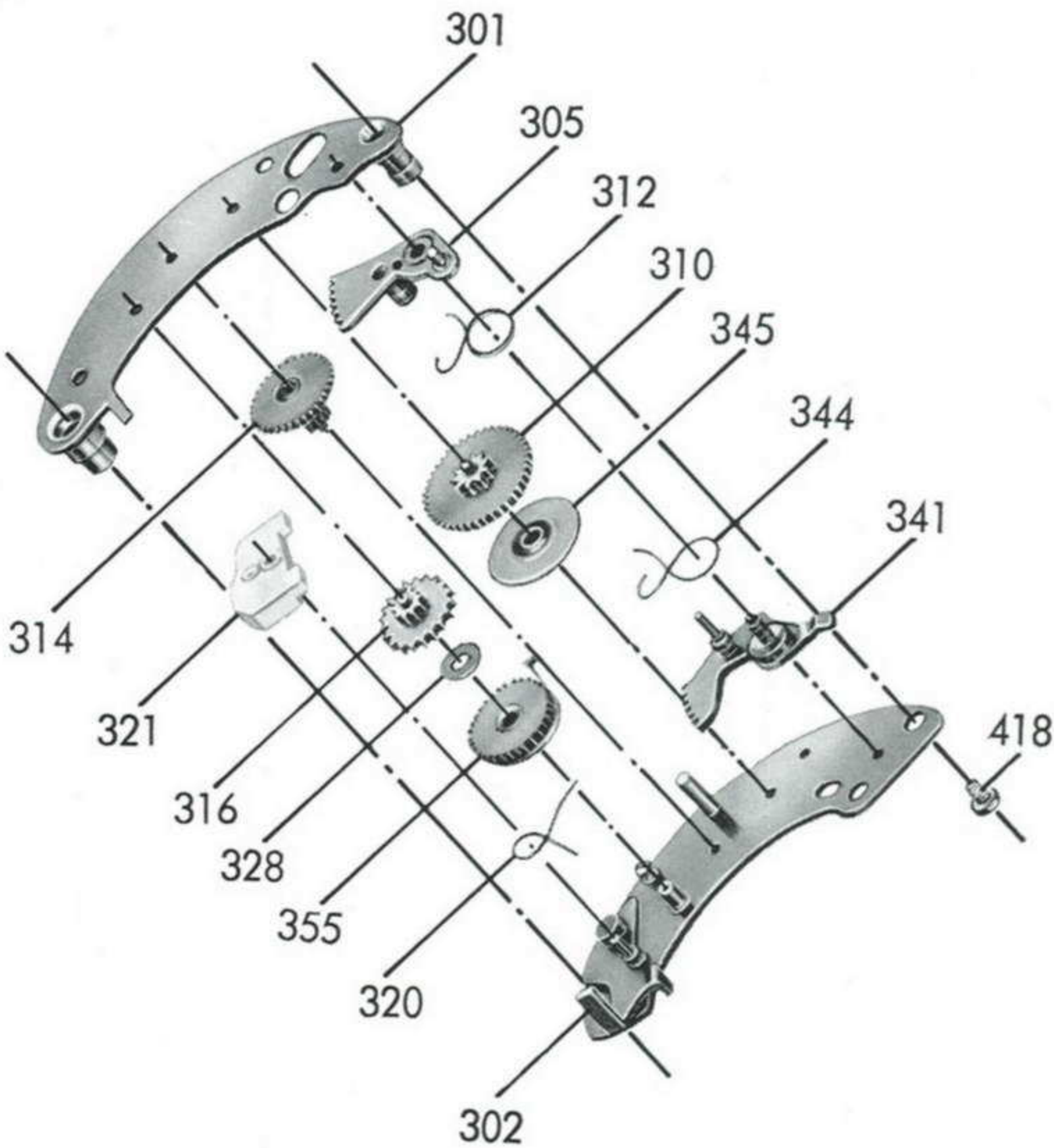
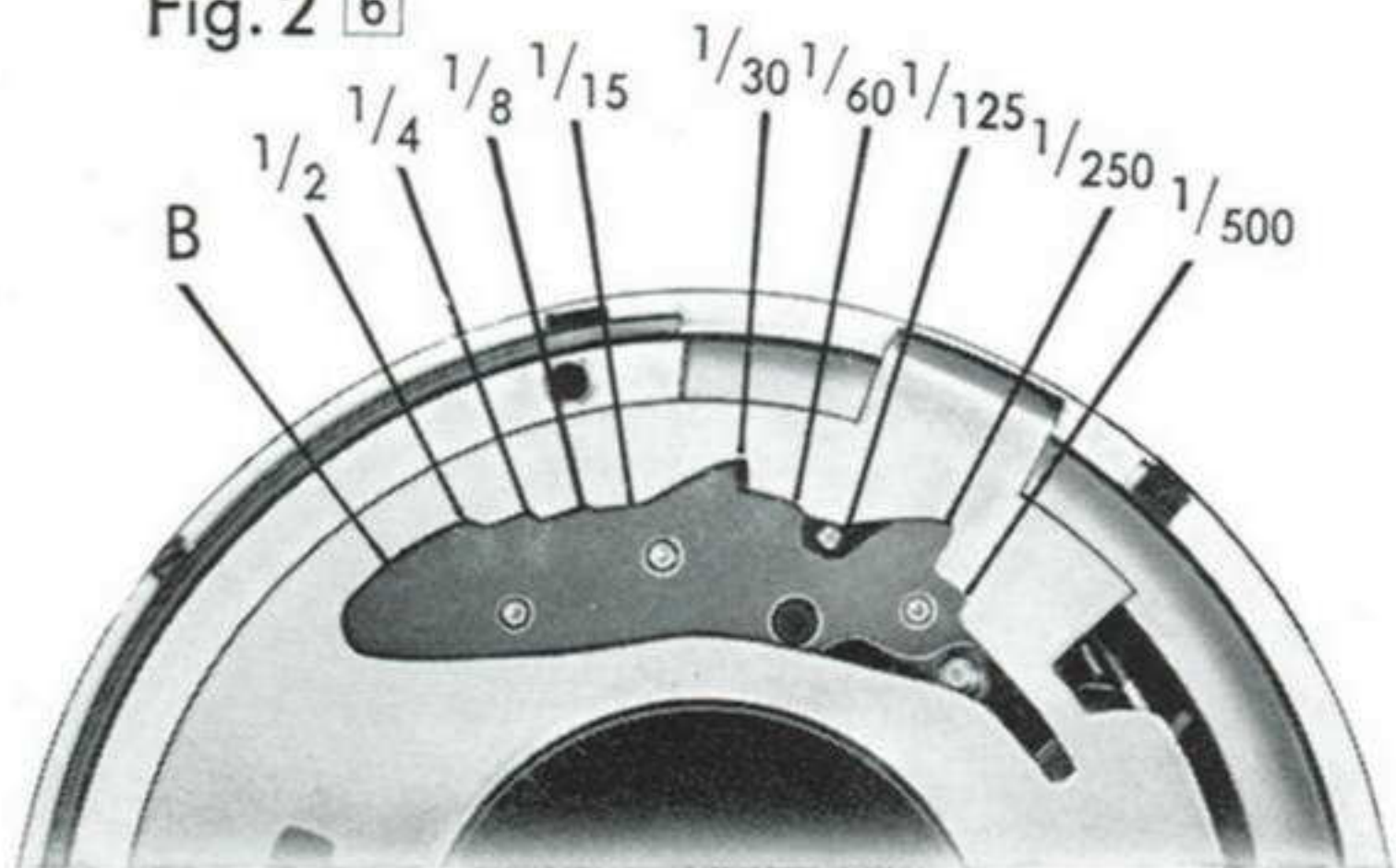


Fig. 3

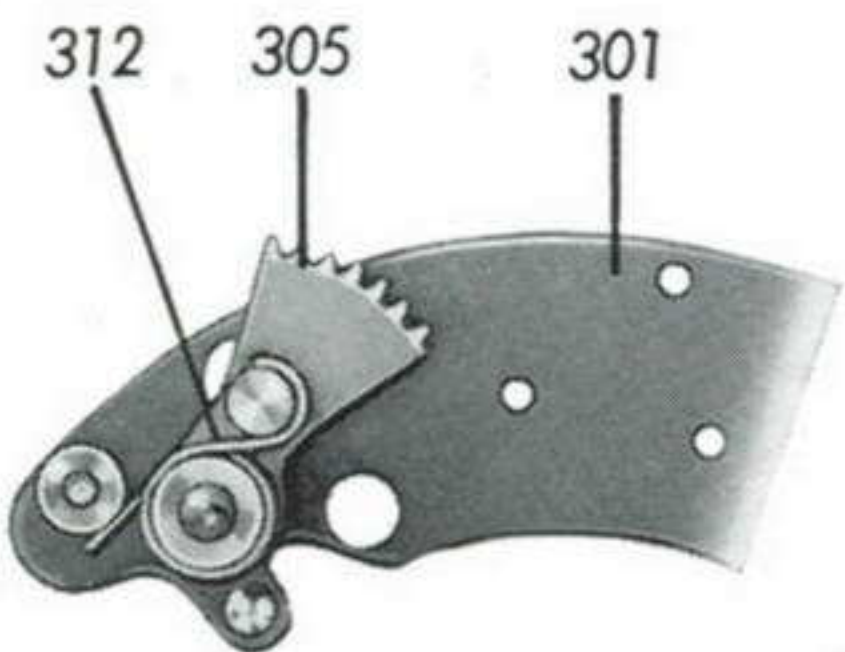


Fig. 4

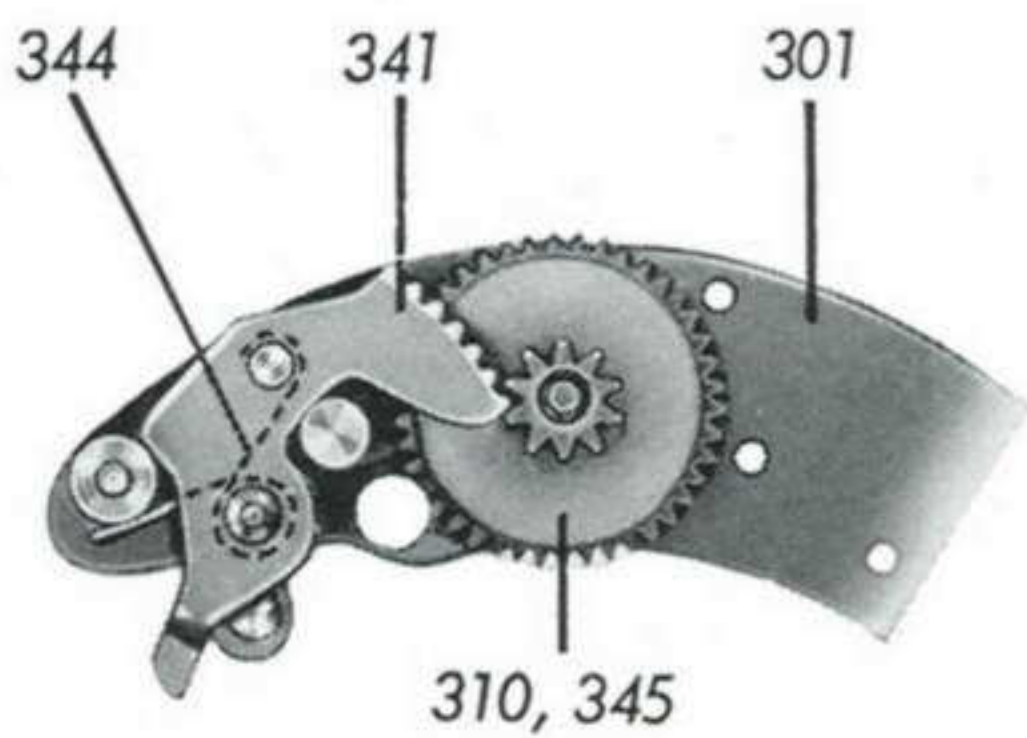
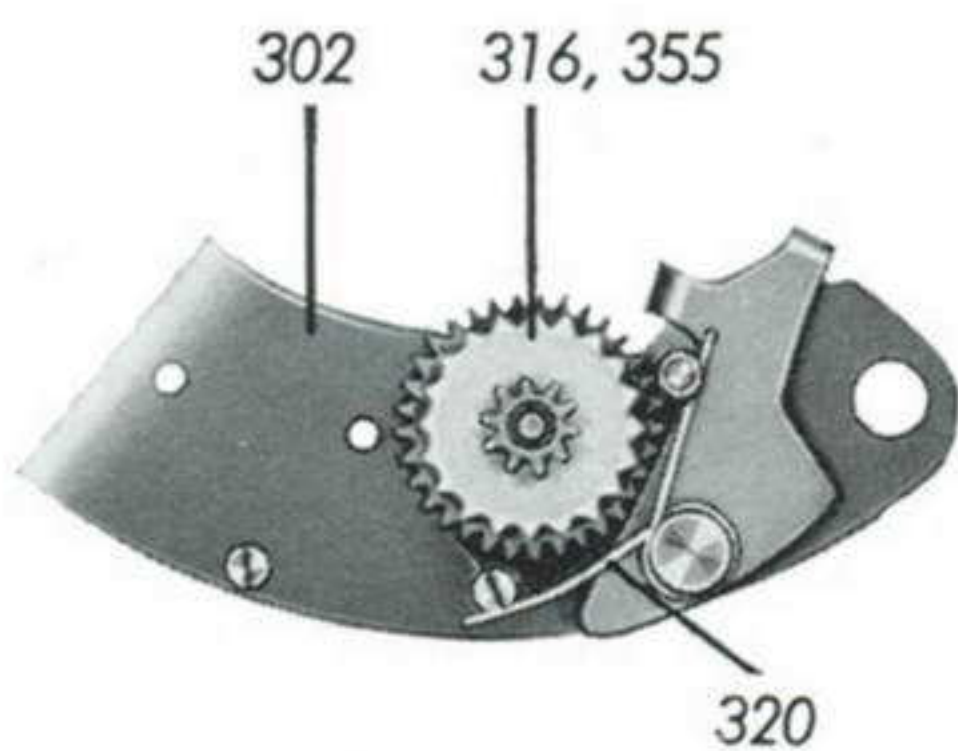


Fig. 5



COMPUR-000-X Reflex
für Firma Rollei-Werke; Braunschweig
for Messrs. Rollei-Werke, Braunschweig

CS-1912-206
Tafel/Plate 4

siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs

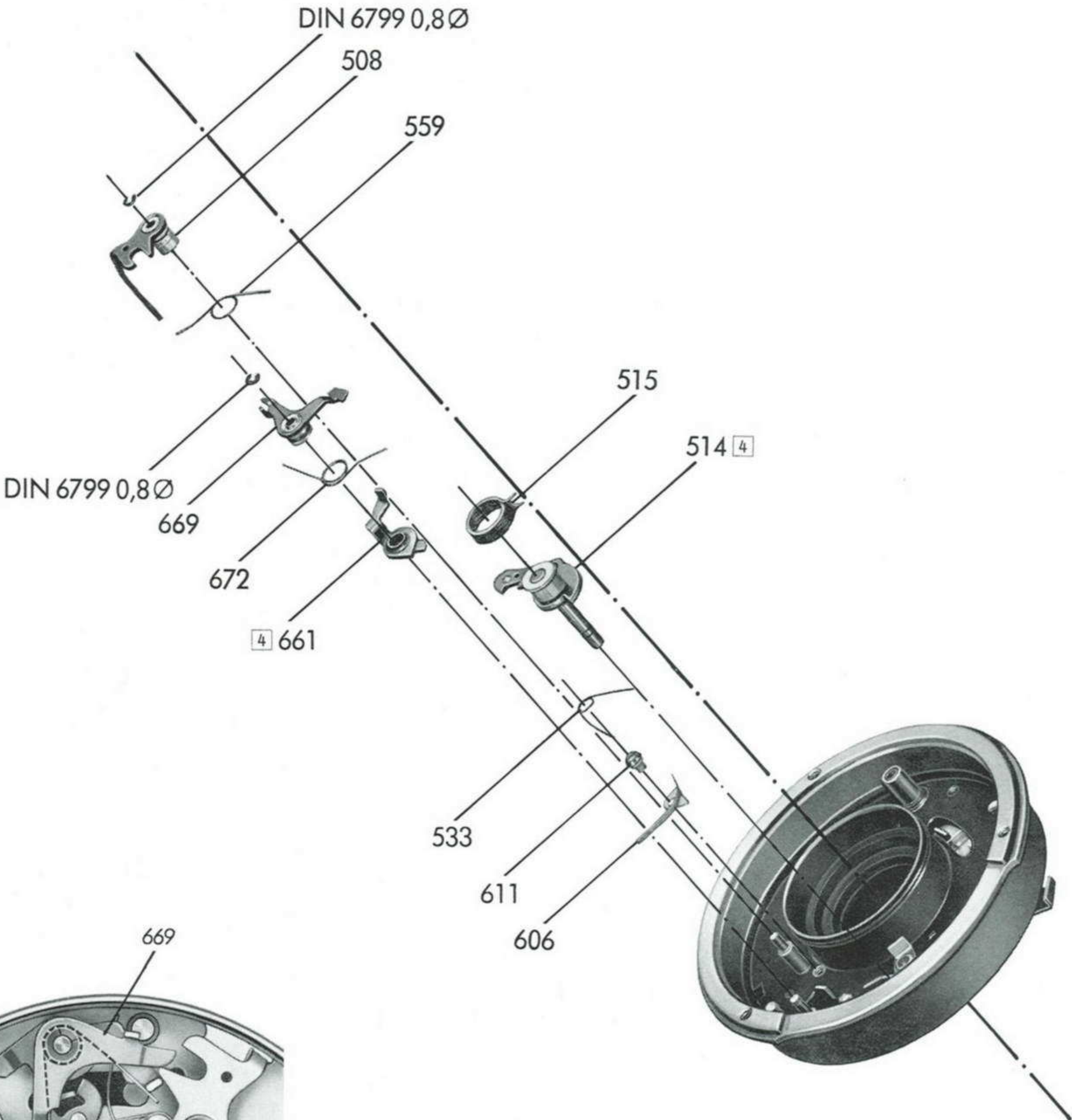


Fig. 1

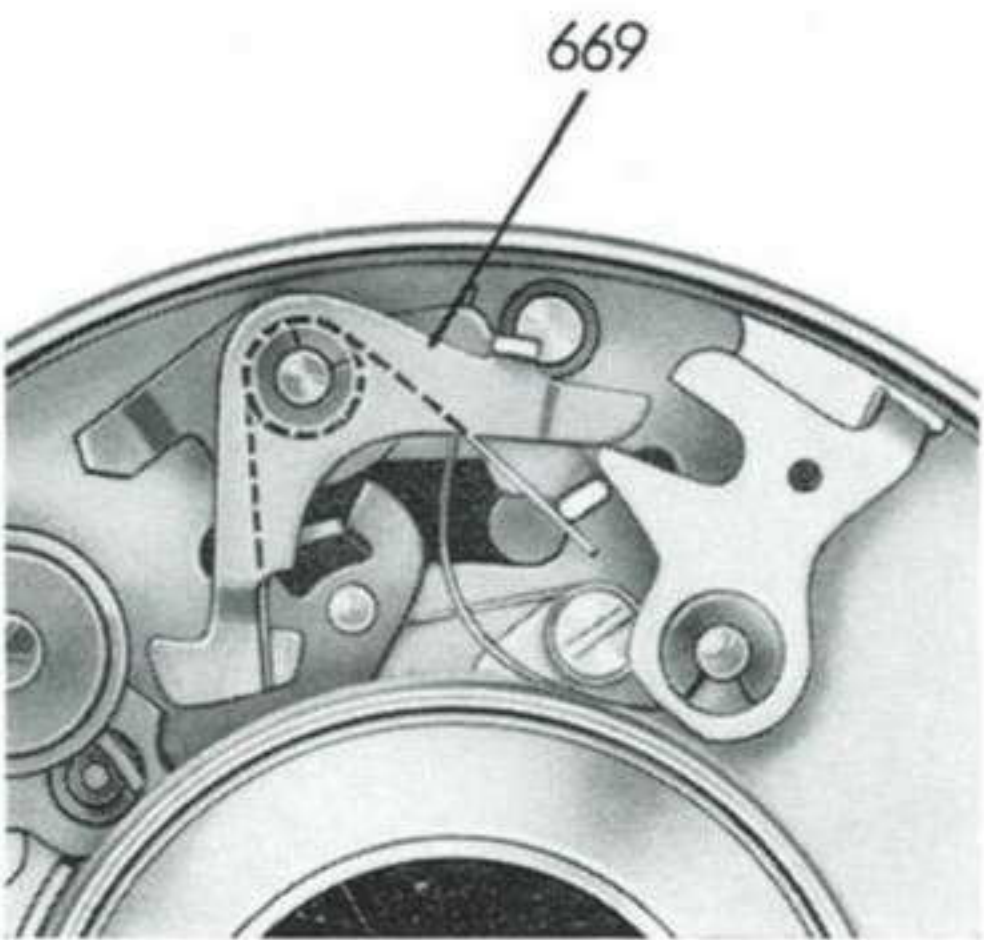


Fig. 2

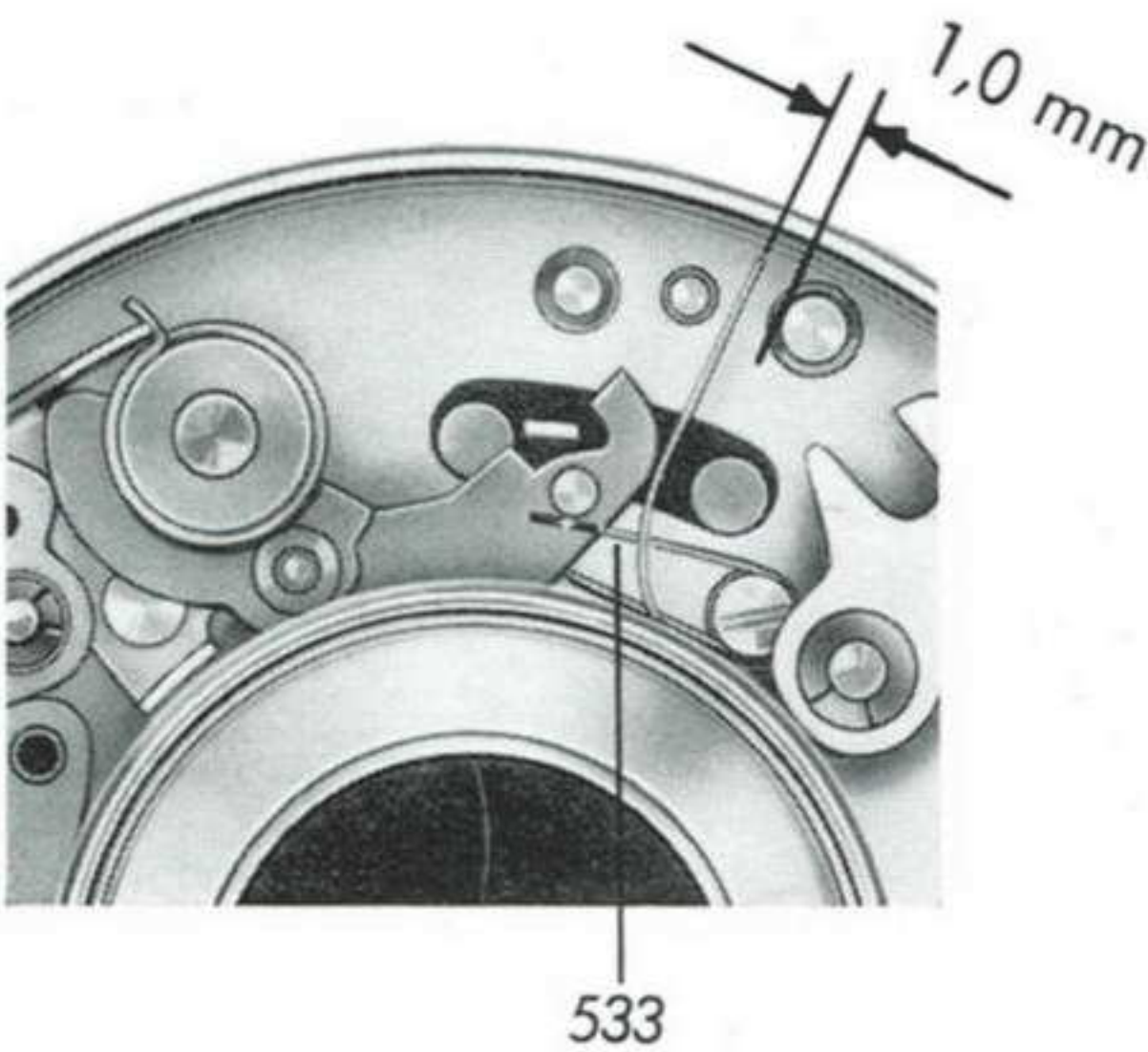
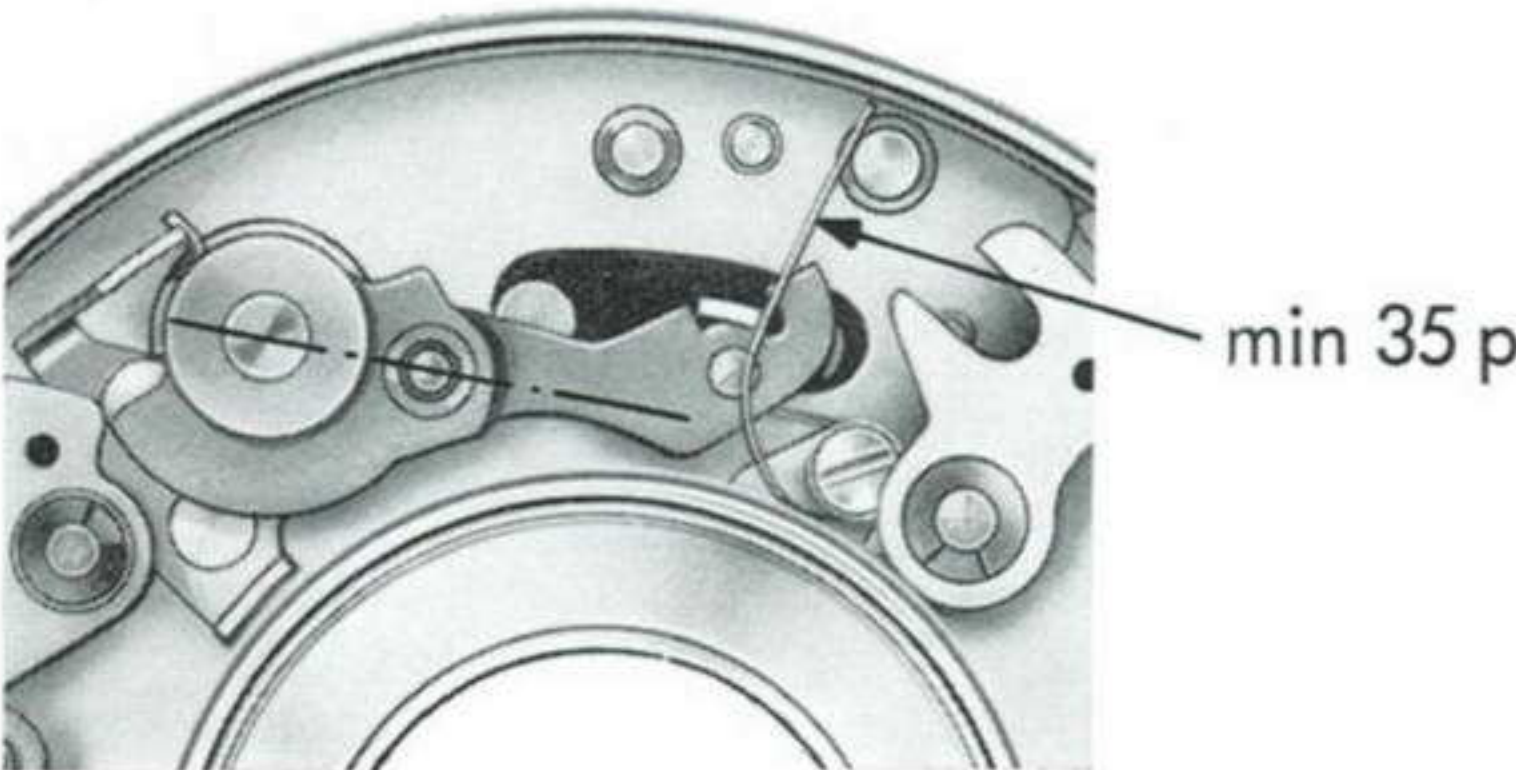


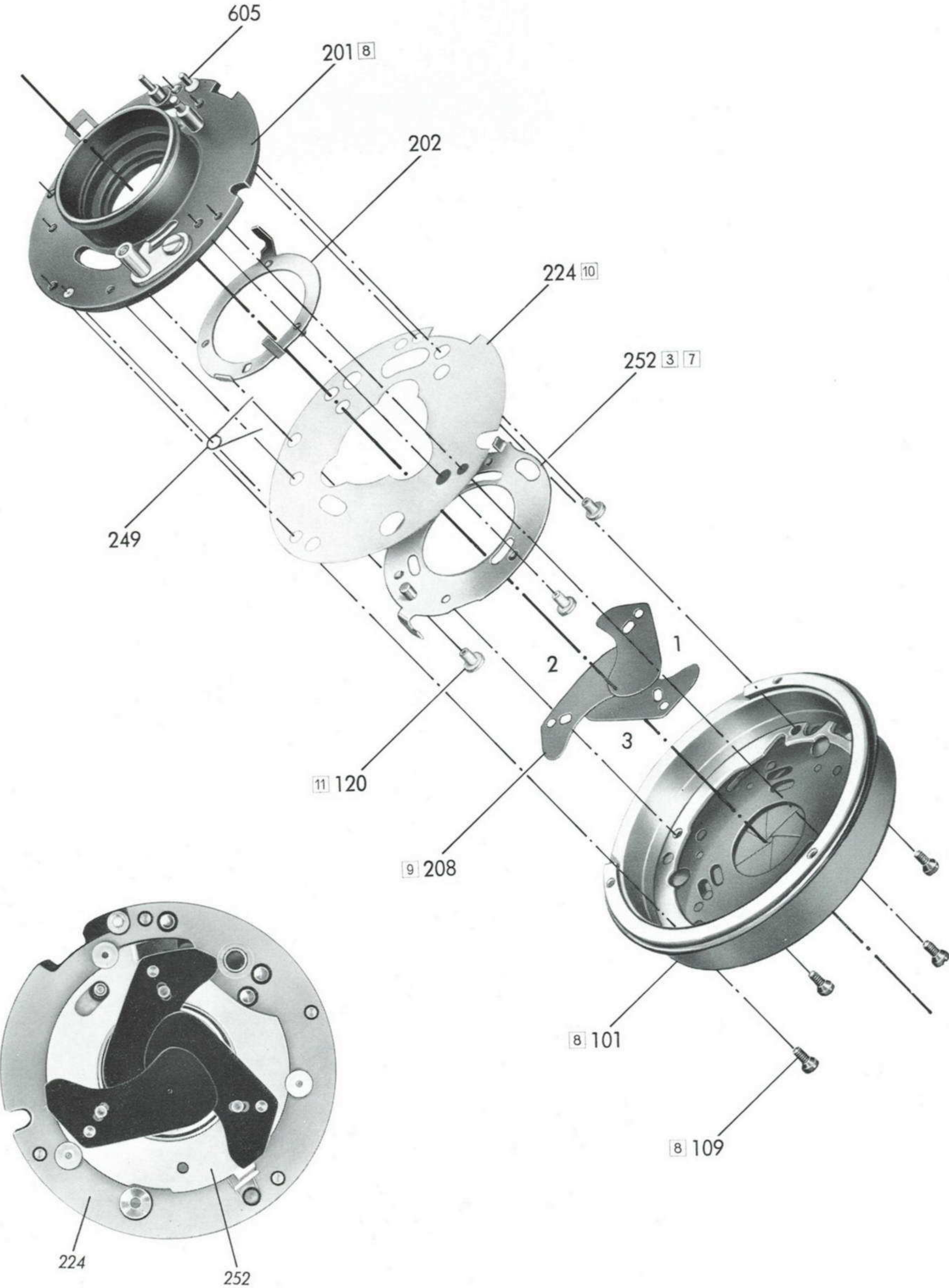
Fig. 3



COMPUR-000-X Reflex
für Firma Rollei-Werke; Braunschweig
for Messrs. Rollei-Werke, Braunschweig

CS-1912-206
Tafel/Plate 5

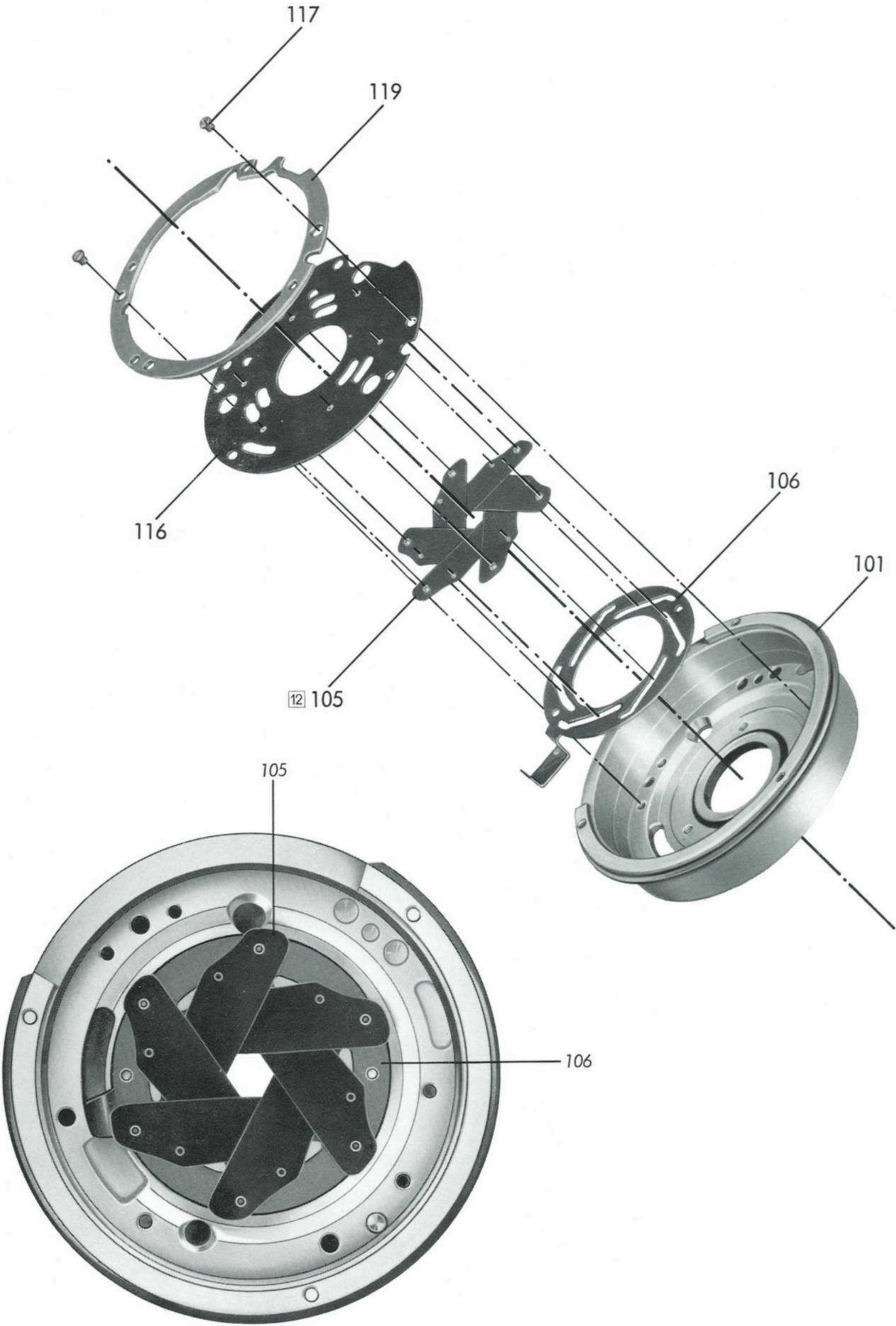
siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs



COMPUR-000-X Reflex
für Firma Rollei-Werke, Braunschweig
for Messrs. Rollei-Werke, Braunschweig

CS-1912-206
Tafel/Plate 6

Siehe Abschnitt ☐ der Reparaturanleitung
See section ☐ of instructions for repairs



COMPUR-RAPID 000-X

Spezialverschluß für Fa. Agfa-Gevaert AG, München
 Special Shutter for Messrs. Agfa-Gevaert AG, Munich

CS 1914-102

Tafel/Plate 1

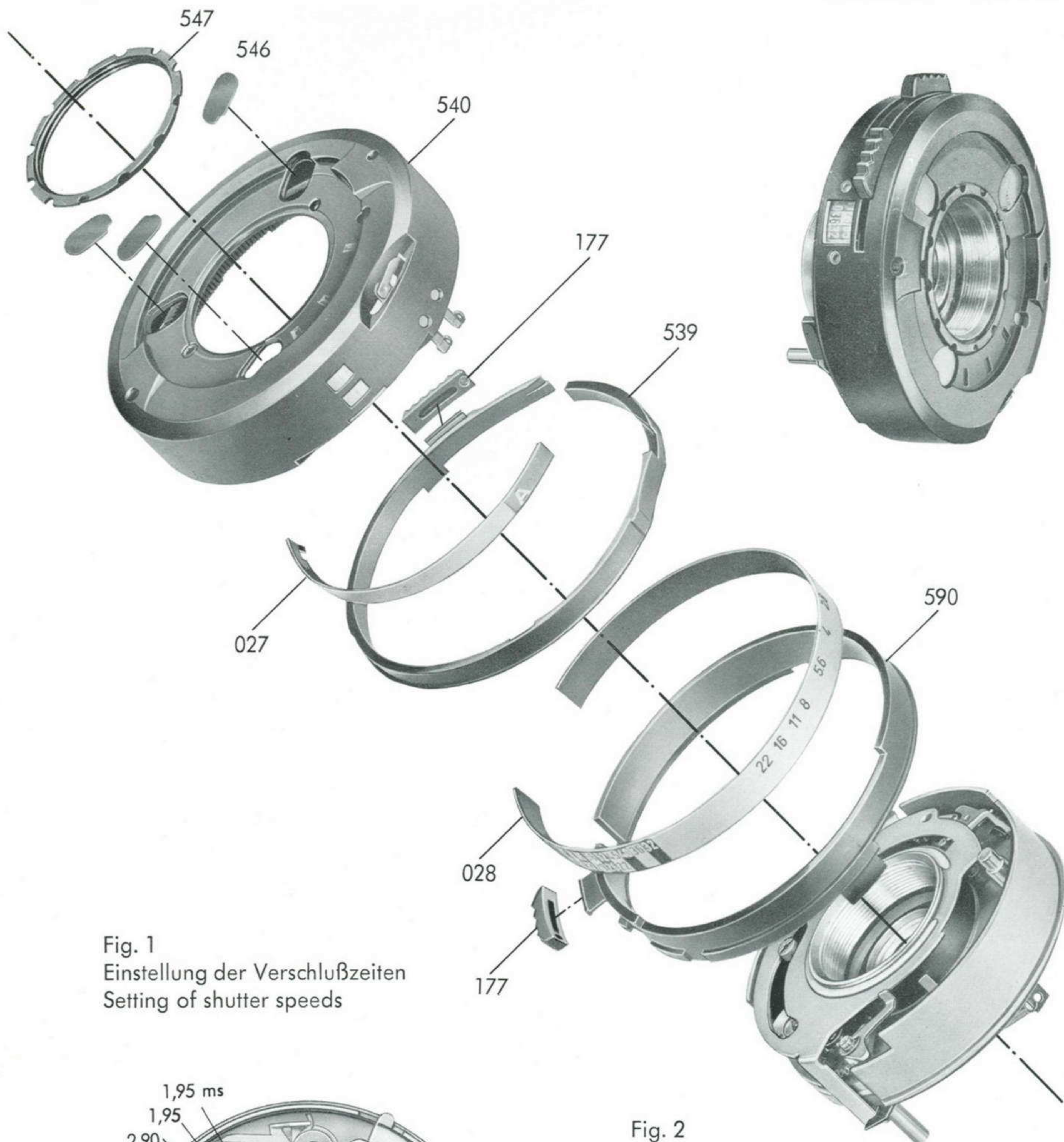


Fig. 1
 Einstellung der Verschußzeiten
 Setting of shutter speeds

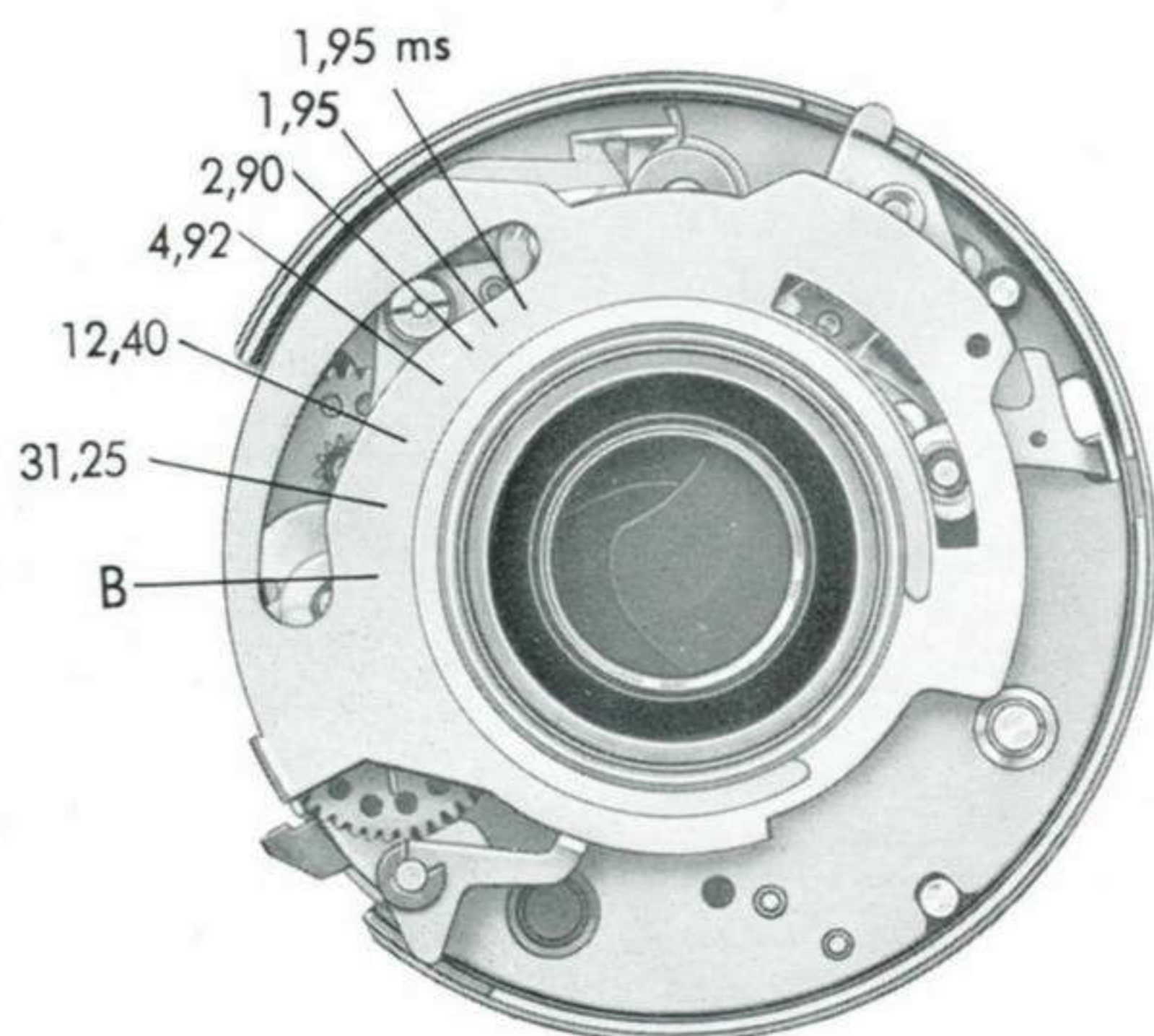
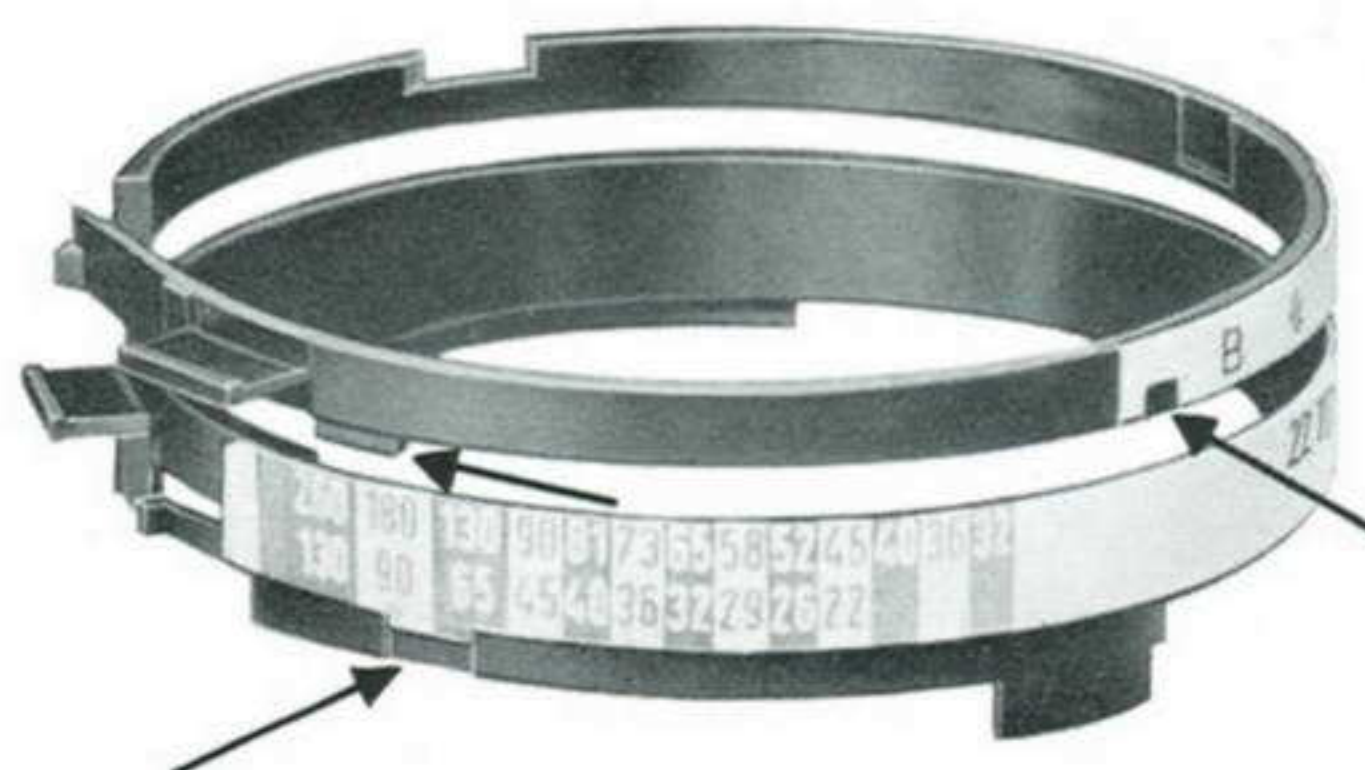


Fig. 2



COMPUR-WERK MÜNCHEN

COMPUR-RAPID 000-X

Spezialverschluß für Fa. Kodak AG, Stuttgart
Special Shutter for Messrs. Kodak AG, Stuttgart

CS-1914-301

Tafel/Plate 1

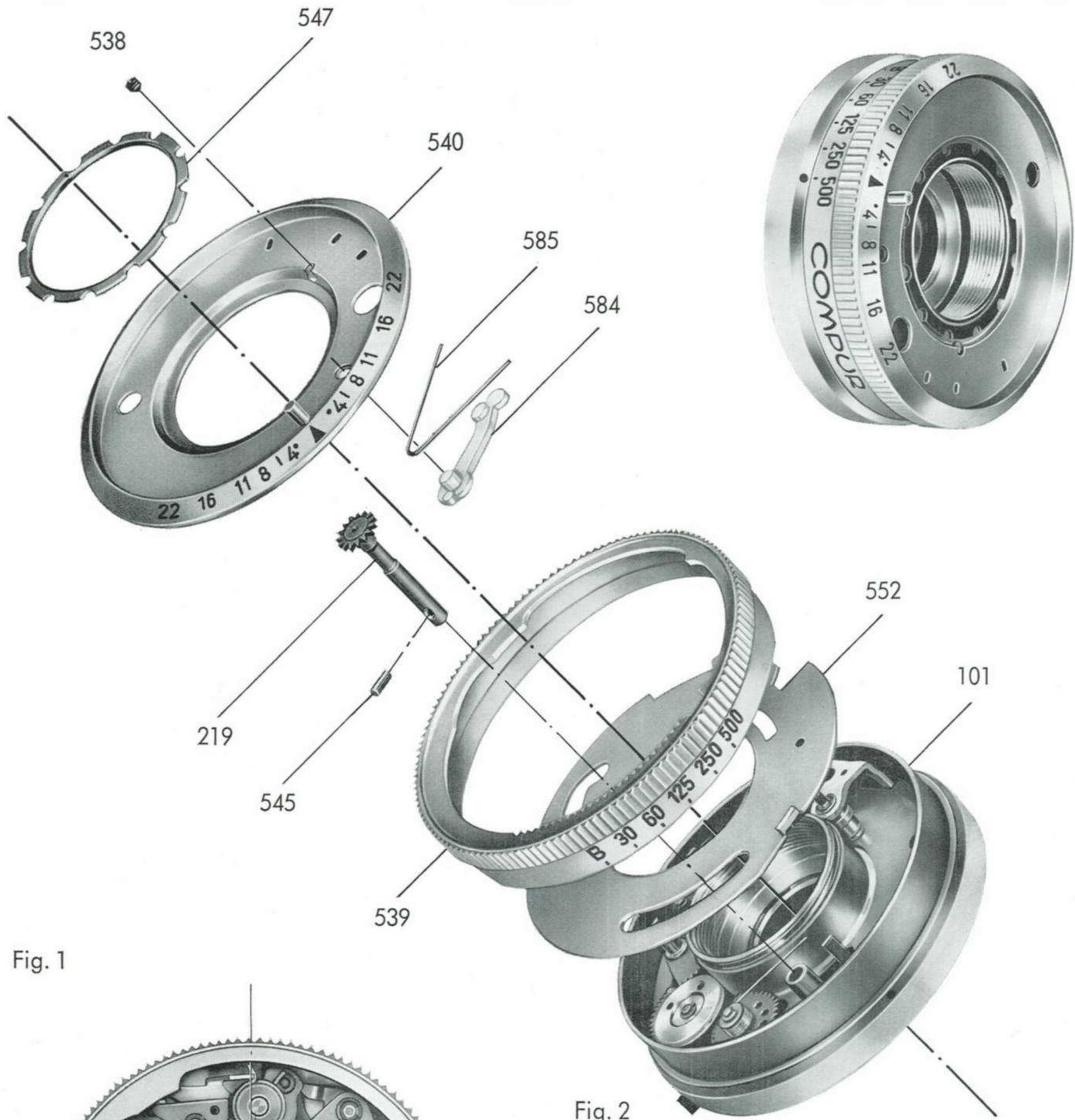
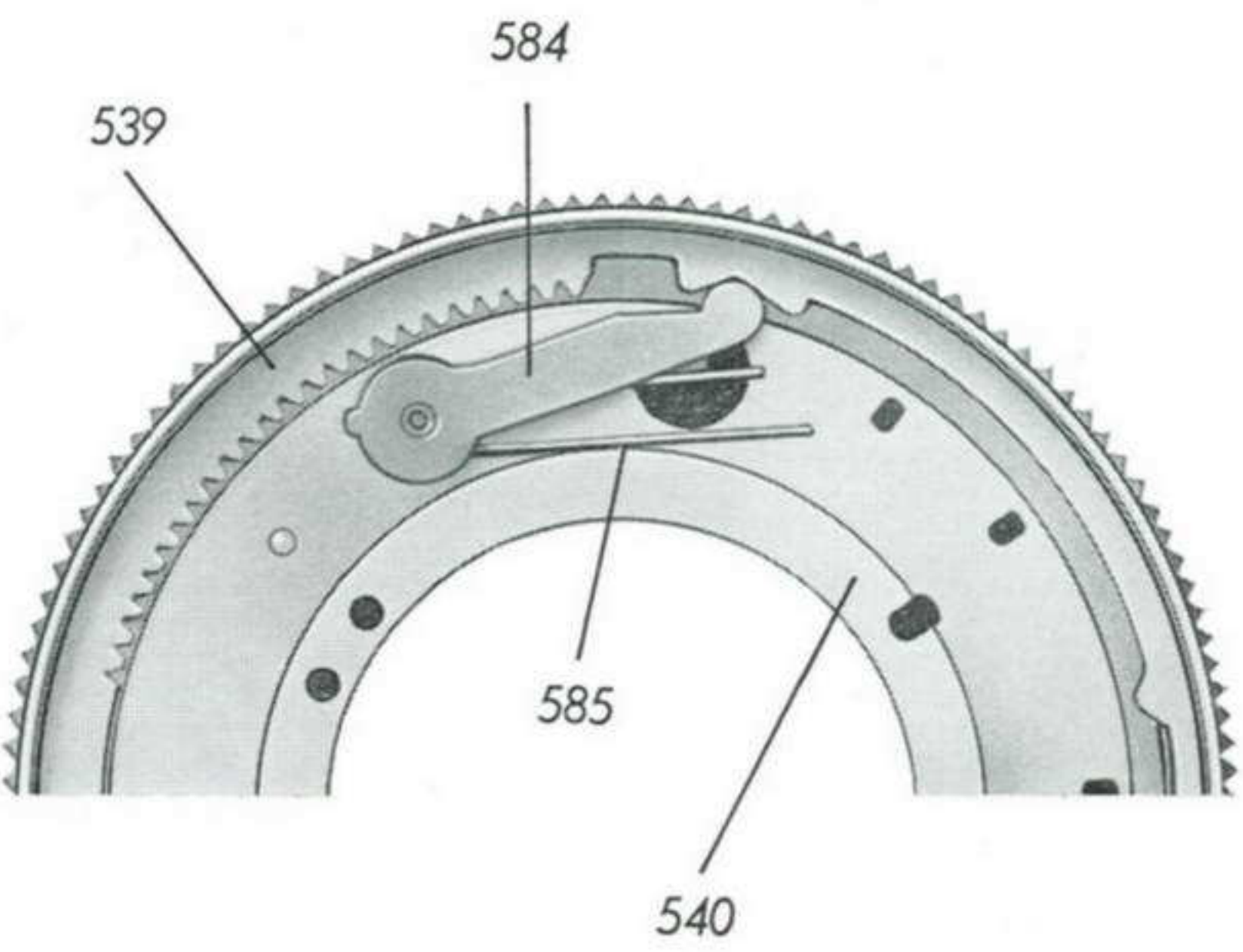
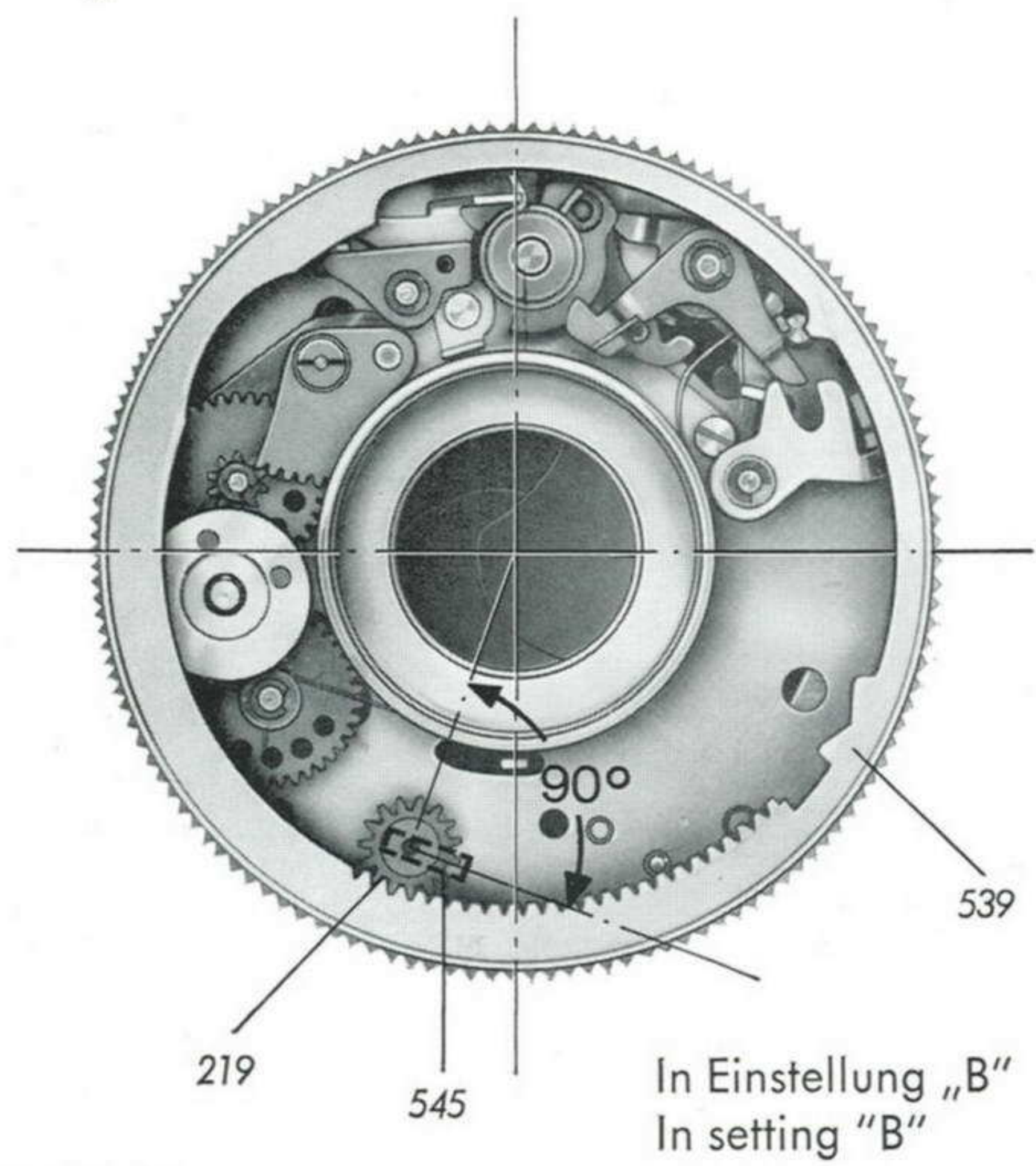


Fig. 1

Fig. 2



COMPUR-WERK MÜNCHEN

Compur Shutter Repair Manual

Section 6

Repair instructions for standard shutters

SYNCHRO-COMPUR 00-MXV
with Tensioning Ring CN-1110-000 and CN-1210-000

Cleaning the Shutter

It is imperative to remove parts or assemblies from the shutter for cleaning, which should be done by rinsing them in clean, grease-free trichloroethylene or perchloroethylene. Escapement and selftimer mechanisms should not be disassembled for cleaning.

Before reinstalling parts in the shutter, be sure they are completely dry and regreased in accordance with the lubricating instructions.

Enameled parts and parts with filled engravings or mounted f-scale should never be wet-cleaned. Use a soft chamois leather or brush.

Lubricating Instructions

The necessary lubricants, herein termed, A, B and C (see Lubrication Schedule), can be ordered from our Service Department. We will not authorise the use of any other lubricants as only those tested in our factory will ensure proper functioning of shutters.

Apply a thin film of the prescribed lubricant to a glass plate and use a fine brush or foam rubber swab to apply the lubricant at the required points. Be sure to stir Lubricant A briskly before use.

Lubrication Schedule 1110-000 indicates both the points to be serviced and the required lubricants.

After cleaning, use Lubricant A to service the following parts not listed in the Lubrication Schedule:

Base plate 201: All shafts, bearing bushes and other parts riveted in position.

Escapement 300 and selftimer 400: All bearings. (The tooth flanks of bright brass gear wheels should also be slightly lubricated; gear wheels and pinions having a grey lustre have been lubricated by a special process during manufacture and never need any subsequent lubrication.)

Assembly and Adjustments

CN-1110-000
Plate

- | | |
|--|---|
| 1. Adjust the exposure setting ring for smooth operation by tightening the threaded ring 547 more or less firmly. After this adjustment is completed, use the retaining screws 538 to lock the threaded ring at the nearest possible point. | 1 |
| 2. The cam ring 552 must be a play-free fit on the mounting tube 204. If necessary, take up play by widening the slots in the cam ring. | 2 |
| 3. The tensioning pinion 517, tensioning ring 528 and drive 514 determine the length of travel during tensioning between the locking of the M-detent and the jumping-back of the blade opening pin in the blade ring 202. | 2 |

CN-1110-000
Plate

Due to possible differences in the tensioning and release locks incorporated in the camera, the length of travel may have to be adjusted in any of the following ways:

- A Engagement of M-detent occurring simultaneously with or shortly after the engagement of the opening pin.
- A₁ Engagement of M-detent shortly before or after engagement of the opening pin.
- B Engagement of M-detent occurring simultaneously with or at any desired time before the engagement of the opening pin.
- C Engagement of M-detent occurring simultaneously with or shortly before the engagement of the opening pin.

The required adjustment is indicated in the applicable Parts List by the letter (A, B or C) used as a prefix to the Stock Number of the tensioning pinion.

If 514, 517 or 528 has to be replaced, the length of travel will have to be checked and readjusted.

In the case of adjustments A and C, the width of the lug on the tensioning pinion should be reduced parallel to the surface of the drive at the point indicated by an arrow in Plate 2. Where the width of the lug is insufficient, a new tensioning pinion should be fitted and adjusted as necessary. Adjustment B requires no additional operations.

Insert the tensioning pinion so that its first tooth engages in the first tooth gap of the tensioning ring.

The three different adjustments just discussed are based on the use of the M-detents and tensioning pinions listed in the Parts Lists. In the case of manually cocked shutters, the tensioning lock is mounted on the M-detent. Where the closing element is coupled to the film winding mechanism, no tensioning lock is used. The M-detent required in each particular case is identified by the number of the Parts List.

- 4. **Bridge 621 with Locking Lever:** Simultaneously with the jumping-back of the opening pin in the blade ring 202 the locking lever should prevent any return movement of the drive 514. Where parts 514 and/or 621 have to be replaced, this function has to be adjusted by rotating the eccentric locking lever pivot 663 (Fig. 7). 4 & 9
- 5. **Escapement 300:** The depth of engagement of the escapement lever is adjusted at the factory in such a manner that, with the lever plate 319 resting against adjusting lug of plate 301, it amounts to 1/2 to 1/3 of the height of the tooth (Figs. 1 & 2). 5 & 9

Push the lever plate towards the periphery of the case to permit insertion of the escapement.

Shutter Speed Adjustment (to be performed in the order given)

- 1 Second (Fig. 3)
Back off the two securing screws and pivot the escapement about the screw 304 on the lever side (towards the mounting tube for increased exposure time, or towards the periphery of the case for shorter exposure time). Firmly tighten the two securing screws upon completion of adjustment.
- 1/15 Second (Fig. 4)
With the cam ring 552 in position, bend the detent pin as required (towards tubular mount for shorter exposure, and towards the periphery of the case for longer exposure).

SYNCHRO COMPUR
Repair Instructions

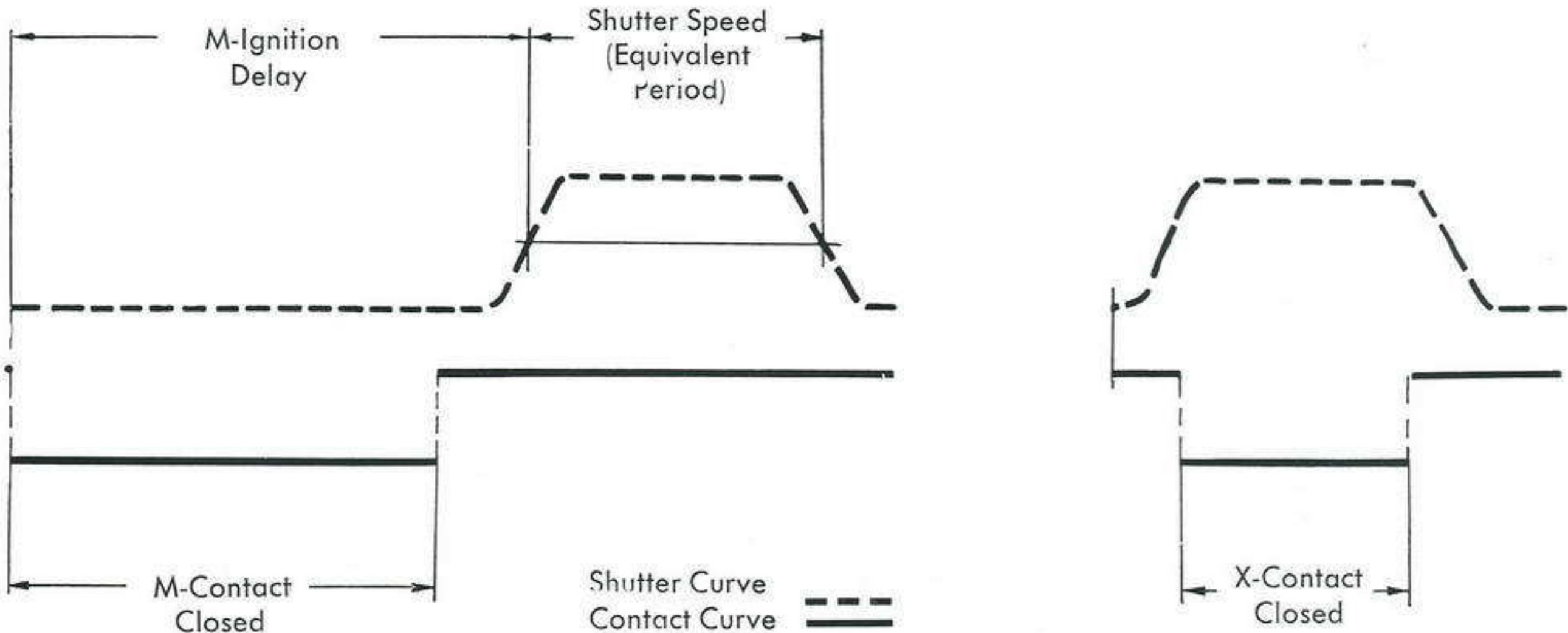
CN-1110-000
Plate

$\frac{1}{500}$ Second (Fig. 5)
The cam ring should render the escapement lever 341 inoperative to such an extent that the drive 514 can run down without any obstruction. For this purpose, the pin of the check lever should be bent as required (Fig. 5).

After these three adjustments have been made, all other shutter speeds will automatically be timed correctly.

The various shutter speeds are subject to the following tolerance limits:

Shutter Speeds	1	2	4	8	15	30	60	125	250	500	(1/s)
Tolerance Limit					$\pm 15\%$					$\pm 20\%$	



6. **Selftimer 400:** Insert the mechanism in a half-wound condition and allow mechanism to run down after insertion. The running-down time is 8 to 10 seconds and need not be adjusted.

6 & 9

The stop 298 for the V-detent lever 421 is in the form of an eccentric, thus permitting the play to be adjusted between the V-detent lever and the blade ring 202 (Fig. 6). The play should be such that, with the selftimer out of operation, the blade ring can run down freely and that the selftimer, when used, will run for no more than one second after the shutter is released.

7. **Stop 299** should be pressed against the tubular mount 204 while being fitted.

8. **The blades 208** and their bearings must be completely free of grease. The sequence in which the parts are to be fitted is shown by the small numerals 1 to 5 in the illustration, beginning with the bearing sleeve of the drive 514. In size 0 shutters (CN-1210-000), the points of the first blade 268 and the last blade 267 are bent slightly upwards to improve their sliding action. "Lastina" varnish 22773, black, should be applied to the fastening screws 230 of the blade mounting plate to lock the screws in position.

SYNCHRO COMPUR
Repair Instructions

CN-1110-000
Plate
7

9. The M-cam check lever 696, M-anchor plate 627, M-detent lock 664 and V-detent lever 421 are riveted in position on the base plate 201. When any of these parts has to be replaced, the respective rivet(s) will have to be removed by drilling. Extreme care must be exercised during riveting to prevent the base plate from being distorted.

10. Diaphragm Segments 105: Both the segments and their bearings should be kept completely free of grease. 8

11. Synchronisation: 4 & 9
The minimum contact gap with the shutter cocked should be 0.5 mm. (0.020") (Fig. 7) (In the case of Synchro-Compur, measure the contact gap in the M position).

Minimum contact pressure in X position: 60 gms. (2.1 ozs.) (Fig. 8).

X-contact closes as soon as the blade points lie between a circle 15.5 mm. (0.610") diameter (size 00) or 22.0 mm. (0.778") diameter (size 0) on the one hand and the full diameter of the shutter aperture.

Any deviations from the above values should be compensated for by bending the contact spring 615 fixed to the X-contact lever as required.

The M ignition advance period as measured between the closing of the contact and the point at which the shutter aperture is one-half open should be 16½ milliseconds ± 10%.

To adjust the M ignition delay, back off screw 618 and rotate eccentric 298 as required. (Fig. 7). This will change the tension of the detent spring 641.

The delay will be shortened by an increase in spring tension and lengthened by a reduction in spring tension. Finally be sure to retighten screw 618 firmly.

The pressure of the M-contact, which is determined by the design of the shutter, should be at least 10 gms. (0.35 oz.).

12. Concentricity and Planar Trueness:

Concentricity: Maximum eccentricity between mounting tube 204 and casing 101: 0.01 mm.

Planar Trueness: Maximum wobble between lens seating of mounting tube and lens seating of casing: 0.01 mm.

SYNCHRO COMPUR 00-MXV "Standard" CN-1110-010

Cleaning the Shutter: See CN-1110-000

CN-1110-010
Plate

Lubrication Instructions: See CN-1110-000
See also Lubrication Schedules CN-1110-000 and CN-1110-020

Assembly and Adjustments

The relative position of the diaphragm setting ring 590 and diaphragm ring 108 is determined by a groove cooperating with a lug. 1

The relative position of the exposure control ring 539, shutter speed coupling ring 163 and cam ring 552 is determined by grooves cooperating with lugs. 1

Items 1 to 11 are the same as under CN-1110-000.

SYNCHRO-COMPUR 00-MXV Reflex BH CN-1110-020

Cleaning of Shutter:	see CN-1110-000	
Lubrication Instructions:	see CN-1110-000	
See also Lubrication Schedules	CN-1110-000 and CN-1110-020	CN-1110-020 Plate

Assembly and Adjustments

Exposure control ring: Proper operation of the setting ring is ensured by the design of the shutter.

Tensioning pinion 517 should be inserted so that the first tooth of the tensioning ring engages between the tensioning lug and the first tooth of the tensioning pinion.	3
---	---

Blades 208 and 267 and their bearings must be completely free of grease. The sequence in which the parts have to be fitted is shown by the small numerals 1 to 5 in the illustration. No. 5 blade (267) has a recess accommodating the tensioning shaft.	3
---	---

When inserting the shutter into the mount 745, depress setting ring lock 747. Firmly tighten screw-on ring 102 and screws 109.	2
---	---

Bayonet Retaining Ring 730: Firmly tighten screws 743.	1
---	---

The recess on the knob side of diaphragm setting ring 590 should drive the lug of the diaphragm ring 108 and the stop rivet should lie between the two stop pins of the sleeve 746.	1
--	---

The relative position of the shutter speed coupling ring 163, exposure control ring 539 and cam ring 552 is determined by grooves and lugs.	1
---	---

Contact: Spring action should firmly urge the contact strip 601 of the shutter against the nipple 600 of the mount 745. The contact must be free of grease and should show no signs of corrosion.	2
--	---

Concentricity and Planar Trueness Test:

Concentricity:	Maximum eccentricity between mounting tube 204 and housing 101 to be .015 mm. or .0006".
Planar Trueness:	Maximum wobble between camera seating of shutter mount 745 and lens abutment of bayonet retaining ring 730 to be .03 mm. or .0012".
	Maximum wobble between lens seating of bayonet retaining ring 730 (reference) and lens seating of housing 101 to be .015 mm. or .0006".
	Maximum wobble between lens seating of housing 101 and lens abutment of mounting tube 204 to be .015 mm. or .0006".

Items 2, 4 to 7 and 9 to 11 as under CN-1110-000.

SYNCHRO-COMPUR 00-MXV "Wide" CN-1110-030

Cleaning of Shutter: see CN-1110-000

Lubricating Instructions: see CN-1110-000
See also Lubrication Schedules CN-1110-000 and CN-1110-030 CN-1110-030 Plate

Assembly and Adjustments

Exposure Control Ring: Proper operation of the exposure control ring is ensured by the design of the shutter.

The blades 208, 267 and 268 and their bearings must be completely free of grease. The sequence of assembly is shown by the small numerals 1 to 5 in the illustration. The second of the blades 267 has a recess accommodating the tensioning shaft. 2

The covering blade 268 is taken as the sixth blade and placed on the pivot of the first blade, so that the fifth blade lies between the first and sixth blades.

Bayonet Retaining Ring 730: Firmly tighten screws 743. 1

The relative position of the shutter speed coupling ring 163, exposure control ring 539 and cam ring 552 is determined by grooves and lugs. 1

Concentricity and Planar Trueness Test:

Concentricity: Maximum eccentricity between bayonet retaining ring 730 (centering diameter for quick-change mount) and inner diameter of outer cover ring 738: .07 mm. or .0028".
Maximum eccentricity between bayonet retaining ring 730 (centering diameter for shutter speed coupling ring 163) and outer diameter of front portion: .05 mm. or .002".

Planar Trueness: Maximum wobble between bayonet retaining ring 730 (lens seating) and camera seating to be .03 mm. or .0012".

Items 2 to 7, 9 to 11 as under CN-1110-000.

SYNCHRO-COMPUR

Repair Instructions

Page 7

SYNCHRO-COMPUR 0-MXV CN-1210-022

GH-Reflex 103

Cleaning of Shutter: as under CN-1110-000

Lubricating Instructions: as under CN-1110-000

See Lubrication Schedule CN-1110-000 and
CN-1210-022

CN-1210-022
Plate

Assembly and Adjustments

Exposure Control Ring: Smooth operation is ensured by design features.

1

The **engraving strip 541** and the speed selector ring 539 are fixed in relation to each other by means of a lug and groove. Attach the strip snugly to the selector ring and secure it with the screws 029.

Tensioning spur wheel 523 is the component which links the shutter to the camera or, in the case of quick-change mounts, to the helical focusing mount. To ensure proper interaction of shutter and camera and to permit easy coupling in the case of quick-change mounts, special attention must be paid to the correct angular position of the driving faces of the tensioning spur wheel. The angular errors of the tensioning spur wheel, which are due to the drive system, are kept as small as possible by selecting the optimum tensioning spur wheels.

The tensioning spur wheel must be installed so that, with the shutter untensioned, the marking on the dedendum circle points to the entre of tensioning gear 522.

3

When it is necessary to replace the tensioning spur wheel, the following procedure is recommended:

Temporarily insert a tensioning spur wheel bearing identifications number "13" in the shutter; then, using gauge LZ 51 1210 022 000, tension the shutter sufficiently to take up the play of the whole tensioning assembly, i. e. until the tensioning ring begins to move. The gauge pointer will then indicate on the scale the identification number of the tensioning spur wheel which must be substituted for spur wheel "13" to ensure proper functioning of the camera.

A complete set of tensioning spur wheel comprises 13 spur wheel numbered 1 to 13 and having faces at various angles.

If you do not possess the above-mentioned gauge, we will gladly carry out the repair.

Tensioning Ring 528. After replacing the tensioning ring, tensioning and release travel must be checked with gauge LZ 51 1210 022 000. If the gauge shows impermissible deviations, they must be remedied by replacing tensioning spur wheel 523 (see section on Tensioning Spur wheel above). Check engagement of the locking lever.

CN-1210-022
Plate

Bridge 621 with Locking Lever: Simultaneously with the spring-actuated return of the opening pin in blade ring 202, the locking lever must block the return movement of the drive 514. When parts 514 or 621 are replaced, this function must be adjusted by turning the eccentric locking lever pivot 663.

The shutter release timing is adjusted by bending the locking lever lug so that the stop face of the locking lever lug is at least 4.5 mm from the milled portion of the housing.

The diaphragm must have closed to its smallest aperture before the shutter is released.

Engraving strip 714

The orientation of the strip is determined by the fact that it is hooked into the flash terminal. The strip must be in perfect contact with the mount 745.

Insertion of Shutter into Mount 745. Ensure concentricity and planar trueness of shutter. After tightening screws 755, check functioning of preset diaphragm 108 (037), blade opening mechanism 252 and diaphragm closing mechanism 754. 2

Indicator Rings 032 and 034 must be positioned symmetrically to the range indicator mark on the mount 745. 1

Contact points: The contact strip 601 of the shutter must be firmly urged against the nipple 600 of the mount 745, and the contact point must be grease-free and uncorroded. 2

Sleeve 746: Firmly tighten screws 055 and 056. Check functioning of preset diaphragm, blade opening mechanism, diaphragm closing spring and MX-lock. 2

Diaphragm intermediate ring 037 and diaphragm setting ring 590 as well as **exposure control ring 539** and **slotted cam ring 522** are held in position relative to each other by lugs and grooves. 1

Concentricity and Planar Trueness:

Concentricity: Maximum eccentricity between mount 745 and sleeve 746: 0.015 mm.

Planar Trueness: Maximum wobble between lens seating of mount and lens seating of sleeve: 0.015 mm.

CN-1210-040
CN-1210-041
Plate

Tighten screws 004 firmly, starting with the one to the right of the red mark.

After replacing the bayonet plate, the tensioning and release travel must be checked with gauge **LZ 52 1210 702 000**. If the gauge shows impermissible deviations, they must be remedied by replacing tensioning spur gear 523. See section on "Tensioning Spur Gear 523", Type CN-1210-022. For CN-1210-040/041/042/047 use also gauge **LZ 52 1210 702 000**.

Tensioning Ring 528: Check tensioning and release travel after replacement of this part (see "Bayonet Plate 001", above).

Focusing Adjustment: To make this adjustment the range scale ring must be removed (see "Range Scale Ring", below).

Segment 049: Insert this part with the fin on top.

Range Scale Ring 027 (028): If it is necessary to remove the range scale ring, it is preferable first to remove the helical focusing assembly from the shutter and then, after removing screw 025 (for CN-1210-040) or the three set screws 025 (CN-1210-041/042/047), to take off the range scale ring.

In type CN-1210-040 proper positioning of the range scale ring is ensured by design features. In types CN-1210-041/042/047 the ring must be set at ∞ (infinity) while up against the stop and then fastened with the screws 025.

Locking Screw 031: Before positioning the range scale ring 026, align locking screw 031 so that when the slotted nut 023 is tightened the point of the locking head swings to the middle of the range scale ring.

In the later version (as of 1965), the complete helical focusing mechanism 073 is mounted on the focusing ring 026 with the aid of the fillister head screws 031 and the clamp ring 049.

Range Setting Ring 026: After completing the focusing adjustment, range setting ring 026 must be set at ∞ (infinity) with the locking screws 031 slackened or (in CN-1210-041/042/047) with the segments loosened and without changing the setting of the helical focusing assembly. This is facilitated by a limit stop which in CN-1210-040 (Plate 2, Fig. 6) comprises a pin and milled abutment, and in CN-1210-041/042/047 a stop plate 024 and screw 115.

Retighten screws 031 and 056 (CN-1210-041/042/047) firmly.

Concentricity and Planar Trueness:

Concentricity: Maximum eccentricity between mount 745 and sleeve 746: 0.015 mm.

Planar Trueness: Maximum wobble between bayonet seating (001) and lens seating of mount 745: 0.04 mm.

Maximum wobble between mount 745 and lens seating of sleeve 746: 0.015 mm.

SYNCHRO-COMPUR 00-MXV STANDARD CN-1110-016
with light value follow-up system and automatic depth
of field indicator

- Cleaning of shutter:** as under CN-1110-000
- Lubricating instructions:** as under CN-1110-000
see also lubricating schedules CN-1110-000 and 1110-016/018
- Assembly and adjustments:** see also Plates CN-1110-000 and CN-1110-010
- Tensioning pinion, tensioning ring and drive:** as under point 3, adjustment type "B".

Diaphragm setting ring 590, diaphragm intermediate ring 037 and diaphragm ring 108 are rigidly fixed to each other by grooves and lugs. The diaphragm setting ring should lie in springy contact with the shutter speed coupling ring (Spring 173).

Shutter speed coupling ring 163, slotted cam ring 552 and shutter cam ring 184 are fixed relative to each other by grooves and lugs.

Indicator rings 032 and 034 are positioned symmetrically to the range indicator.

Rocker 040 is carried on the rocker pivot of the diaphragm intermediate ring 037, its long pin lying in the guide groove of the STA-housing 808. The short pin engages in the slot of the indicator ring 032.

STA-housing 808 — before mounting the complete assembled housing on the shutter, check the operation of the indicator mechanism at the lug of the diaphragm intermediate ring 037.

Insert click stop ball generously greased with lubricant A.

Shutter speed coupling ring 163: Movement and stop engagement must be adjusted by tightening screw-on ring 547 just sufficiently to permit smooth travel of the slotted cam ring 552 and effective stop engagement. The vertical play of the shutter speed coupling ring 163 between the shutter housing 101 and STA-housing 808 should not exceed 0.2 mm. If necessary, adjust the ball stop spring. When properly adjusted, the screw-on ring should be secured with the retaining screw 538 at the nearest possible point.

Light value stem 192 is the coupling member between the shutter and the camera. It must be so carefully set that error-free indication of light values is ensured.

For inserting the light value stem, the mechanism must be set at light value 9, that is, the shutter and the exposure meter follower pointer with the camera coupling member must be set at 9. The sliding surfaces of the rivets on the stem must lie on the two cams (Diaphragm ring 108 and shutter cam ring 184) in all possible settings.

The pointer position must alter with every change in f-stop or shutter speed setting. If shutter speed and f-stop (light value) are changed simultaneously, the setting of the follower pointer should remain unchanged.

Items 2 to 11 as under CN-1110-000.

CN-1110-016
CN-1110-018

Plate
1 1

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SYNCHRO-COMPUR 00-MXV STANDARD CN-1110-018

with automatic depth of field indicator

Cleaning of shutter: as under CN-1110-000

Lubricating instructions: as under CN-1110-000
see also lubricating schedules CN-1110-000 and CN-1110-016/018

Assembly and adjustments: see also Plates CN-1110-000 and CN-1110-010

CN-1110-018
Plate

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment type "B".

Exposure control ring 539, shutter speed coupling ring 163 and slotted cam ring 552 are fixed relative to each other by grooves and lugs.

Diaphragm setting ring 590, diaphragm intermediate ring 037 and diaphragm ring 108 are fixed relative to each other by grooves and lugs. 1

Indicator rings 032 and 034 are positioned symmetrically to the range indicator. 1

Rocker 040 is supported on the rocker pivot of the diaphragm intermediate ring 037, its long pin lying in the guideway of the STA-housing 808. The short pin engages in the slot of indicator ring 032. 1

STA-housing 808 — before mounting the complete assembled shutter housing, check the operation of the indicator mechanism at the lug of the diaphragm intermediate ring 037. 1

Insert click stop ball generously greased with lubricant A.

Exposure control ring 539: Movement and stop engagement must be adjusted by tightening screw-on ring 547 just sufficiently to permit smooth travel of the slotted cam ring 552 and effective stop engagement. The vertical play of the exposure control ring 539 between shutter housing 101 and STA-housing 808 should not exceed 0.2 mm. If necessary, adjust the ball stop spring. When properly adjusted, the screw-on ring should be secured with the retaining screw 538 at the nearest possible point.

Items 2 to 11 as under CN-1110-000.

SYNCHRO-COMPUR 00-MXV Bayonet Sleeve Reflex CN-1110-024
with light-value follow-up system

Cleaning of shutter

It is imperative to remove parts or assemblies from the shutter for cleaning, which should be done by rinsing them in clean, grease-free trichloroethylene or perchloroethylene. Escapement and selftimer mechanisms should not be disassembled for cleaning.

Before reinstalling parts in the shutter, be sure they are completely dry and regreased in accordance with the lubricating instructions. Parts with a grey lustre must not be rubbed dry with a cloth.

Lacquered parts or parts coated with grey anti-friction lacquer, knobs of plastics, and parts with filled engravings or mounted f-scales should never be wet-cleaned. Use a soft chamois leather or brush.

Lubricating instructions: as under CN-1110-000
See also lubrication schedules CN-1110-000 and CN-1110-024

Assembly and Adjustments CN-1110-024
Plate

Tensioning Pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment type "B".

Exposure control ring 539: Proper movement and stop engagement are ensured by the design. After replacing bayonet retaining ring 730, it may be necessary to adjust the stop ball spring so that the exposure control ring moves smoothly and the slotted cam ring 552 engages in the stops effectively. 2 & 3

Blades 208 and 267 and their bearings should be completely free from grease. The order of insertion is indicated in the illustration by the small numerals 1 to 5. The fifth blade 267 has a recess to accommodate the tensioning shaft. 3

Bayonet retaining ring 730, exposure control ring 539 and flanges ring 815: When replacing any of these parts, the vertical play of the exposure control ring must be checked. It should lie between 0.03 mm. and 0.08 mm. If there is too little play, the guide surface for the exposure control ring on the bayonet retaining ring must be machined down (turned) to size. If there is too much play, the bayonet retaining ring must be replaced. 2

Then the following truing operations must be carried out on the bayonet retaining ring:

- (a) Vertical play (as described above)
- (b) For interchangeable front components, the distance between the face of the tube and the lens seating of the bayonet retaining ring is 3.0 – 0.02 mm. Truing is carried out by turning out the lens seating of the bayonet ring while it is firmly screwed into the shutter (for checking see "Concentricity and Planar Trueness Test").

CN-1110-024
Plate

During truing special care must be taken to ensure that no chips reach the blades or the inside of the shutter (cover carefully).

If you are unable to do the turning work yourself, we will gladly carry out the repair. In such case, please send us the entire shutter.

Diaphragm opening ring 761 and reversing pinion 757: When inserting the pinion, the third tooth — from the left — of the opening ring must point to the centre of the shutter and to the marking on the reversing pinion. This marking is engraved in the gap between two teeth of the reversing pinion (lower illustration, arrow). 2

Diaphragm ring 108 and blade cover 116 are fixed relative to each other by a groove and pin. 2 & 3

Coupling 722 is pressed on to the tensioning pinion, without jamming the rings, after positioning the diaphragm intermediate ring 037 in the above-described open position. If the shutter front is also open, the tensioning pinion must be supported when the tensioning pinion is pressed on. Check smooth operation of gears and rings. 2

Diaphragm setting ring 590 and diaphragm intermediate ring 037 are fixed relative to each other by a groove and lug. 2

Idler gear 820 is placed on the shaft with the depression towards the adjusting plate 818 (shutter mount 745). Check movement with light value stem 192 and grease generously with Lubricant A. 1

Assembly of light value mechanism

Before disassembling the light value mechanism, it is advisable to mark the position of the light value stem 192 for settings of „B“ and f/22. 1

(a) For repair the shutter is opened at the front (outer cover ring 738, bayonet retaining ring 730 and exposure control ring 539 removed). 2

With the aperture set at f/22, flanged ring **815** must be turned so that the axis of the wheel lies over the centre of the MX setting ring lock lever 747 (lower illustration). 1

Insert exposure control ring **539** with cam ring **552** in position „B“. The exposure control ring and cam ring are fixed relative to each other by a groove and lug. 2 & 3

Cover plate **540:** The recess must be in the vicinity of the click stop ball. 2

SYNCHRO-COMPUR
Repair Instructions

CN-1110-024
Plate

Bayonet retaining ring **730** with ball stop (heavily greased with lubricant A) are inserted in position "B" and firmly fastened with screws **743**. 2

Check: It should be possible to set both extreme aperture values and, after releasing the shutter, the diaphragm should automatically set itself to any preselected stop before the blades open.

(b) Repair effected from the rear of the shutter.

Before re-assembling the light-value mechanism, cover plates **540** and exposure control ring **539** should be removed. 2

Before inserting the shutter in shutter mount 745 the light value stem **192** should be turned to the previously marked position and the diaphragm set to f/22 with diaphragm setting ring **590** and firmly held there. 1 u. 2

When positioning the shutter mount, the setting ring lock **747** should be kept swung out, tensioning shaft and light-value stem should be turned until the pinions engage and the shutter mount is seated firmly on the housing. 1

Fasten with screws **753**. 1

Check: It should be possible to tension and release the shutter without hindrance; check position of light-value stem. It should be possible to set the largest and smallest apertures (with diaphragm setting ring 590).
Further assembly of the light-value mechanism as under (a).

Adjustment of the light-value mechanism: 1 u. 2

After replacing one of the parts of the light-value mechanism (539, 815, 590, 745), the light-value stem 192, or the idler gear 820, the reverse play and the toothed pinion engagement of the completely assembled shutter should be checked.
The reverse play of exposure control ring 539 to diaphragm setting ring 590 and the engagement of the teeth can be adjusted by shifting the adjustment plate **818**. 1

For this purpose, loosen screw 831 and shift eccentric screw **825**. 1

Screw 831 should be retightened after adjustment.

Indicator rings 032 and 034 are placed symmetrically to the range setting indicator.

Rocker 040 is supported on the pivot of the diaphragm intermediate ring 037 and its long pin runs in the guide groove of the mount body 020. The small pin engages in the slot in the indicator ring 032. 1 u. 2

Concentricity and Planar Trueness Test

Concentricity: Maximum eccentricity between housing and mounting tube: 0.01 mm. (Always measure at mount sleeve).

Maximum eccentricity between lens centering (housing and mounting tube) and camera centering (shutter mount 745: centering diameter 46.0 mm): 0.03 mm.

Planar trueness: Maximum wobble between camera seating surfaces (housing, tube and bayonet retaining ring): 0.01 mm.

Maximum wobble between lens seating surface and camera seating surface on shutter: 0.02 mm.

Points 2 to 11 unchanged as for CN-1110-000.

SYNCHRO-COMPUR

Repair instructions

SYNCHRO-COMPUR 00-MXV Standard CN-1110-025 and CN-1110-019
with light-value follow-up system

Cleaning of shutter as under CN-1110-000

Lubrication instructions as under CN-1110-000
See Lubricating Charts CN-1110-000 and
CN-1110-025/026

Assembly and adjustments

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment "B".

CN-1110-019
CN-1110-025

Plate

Exposure control ring 539: Smooth action and proper functioning of stops are ensured by the design. After replacing the cover plate, it may be necessary to adjust the ball stop spring so that with smooth travel of the exposure control ring the slotted cam ring 552 (shown in Plate 3, CN-1110-024) engages efficiently.

Cover plate 540, exposure control ring 539 and flanged intermediate ring 815: When replacing one of these parts, the vertical play of the exposure control ring must be checked. It should be between 0.03 mm and 0.08 mm. If there is too little play, the planar guide surface for the exposure control ring on the cover plate must be machined down. If there is too much play, the cover plate must also be replaced and, if necessary, the adjustment above carried out.

Assembly of the light-value mechanism: (a) Repair from the front end of the shutter. (Cover plate 540 and exposure control ring 539 are removed, but not retaining plate 174).

Diaphragm setting ring 590 with diaphragm ring 108 and flanged intermediate ring 815 are turned in anti-clockwise direction to the stop (i. e. largest aperture). Exposure control ring 539 with slotted cam ring 552 — fastened by groove and lug — are placed at setting "B"; the flanged intermediate ring must not be shifted from its position during this operation.

Cover plate 540, with ball stop inserted (heavily greased with lubricant A), is then mounted and firmly fastened with screws 004.

(b) When effecting repair from the rear of the shutter retaining plate 174, diaphragm setting ring 590 and flanged intermediate ring 815 are removed, but not the cover plate).

Exposure control ring 539 with slotted cam ring 552 is inserted at setting "B".

Flanged intermediate ring **815** is so mounted that one edge of the recess is aligned with one edge of the housing groove, as in illustration plate CN-1110-019, lower illustration arrows.

When positioning setting ring **148**, ensure that the shutter speed lever spring **673** (= setting ring spring, see illustration plate CN-1110-016, lower illustration) contacts the setting ring pin on the correct side.

Set the diaphragm to the smallest aperture with diaphragm ring **108** (up against stop) and mount the diaphragm setting ring. Fastened by groove and lug. Retaining plate **174** should be screwed on with the MX locking lever swung out.

Check: At settings "B" and "500", it should be possible to set both the largest and the smallest aperture.

CN-1110-019
CN-1110-025
Plate
1 1

Points 2 to 11 unchanged as for CN-1110-000

SYNCHRO-COMPUR 00-MXV Standard CN-1110-026
with light-value follow-up system and automatic depth of field
indicator for front lens adjustments

Cleaning of shutter as under CN-1110-000

Lubrication instructions as under CN-1110-000
See lubricating charts CN-1110-000 and CN-1110-025/026

Assembly and adjustments See illustration plates CN-1110-000 and CN-1110-025

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment "B".

Exposure control ring **539**: Smooth action and proper functioning of stops are ensured by the design. After replacing the STA-housing **808**, it may be necessary to adjust the ball stop spring so that with smooth travel of the exposure control ring the slotted cam ring **552** engages efficiently. 1

STA-housing **808**, exposure control ring **539** and flanged intermediate ring **815**: When replacing one of these parts, the vertical play of the exposure control ring must be checked. It should be between 0.03 mm and 0.08 mm. If there is too little play, the guide surface for the exposure control ring on the STA-housing should be machined down. If there is too much play, the STA-housing must also be replaced and, if necessary, the above adjustment carried out. 1

If you are unable to do the turning work yourself, we will gladly carry out the repair for you. In such case please send us the entire shutter, or the STA-housing alone with exact specifications of how much metal is to be removed.

SYNCHRO-COMPUR
Repair Instructions

CN-1110-026
Plate

Indicator rings 032 and **034** are positioned symmetrically to the range setting indicator on the STA housing.

1

Rocker 040 is carried on the pivot of the intermediate diaphragm ring **037** and its long pin runs in the cam of the STA-housing **808**. The small pin engages in the slot in the indicator ring **032**.

1

Assembly of light-value mechanism:

(a) Repair with the front of the shutter open.
(STA-housing **808** and exposure control ring **539** removed, but not retaining plate **174**).

1

Diaphragm setting ring **590** with diaphragm ring **108** and flanged intermediate ring **815** are turned anti-clockwise to the stop (i. e. largest aperture). Exposure control ring **539** with slotted cam ring **552** — fixed by groove and lug — is positioned at **setting "B"**. Care should be taken not to displace the flanged intermediate ring.

Before mounting the complete assembled housing on the shutter, STA-Housing **808** should be checked at the lug of the intermediate diaphragm ring **037** for smooth action of the indicator mechanism and the ball stop inserted (heavily greased with lubricant A).

1

Then firmly screw the housing into position with threaded ring **547** and fasten at the nearest possible point with retaining screw **538**. Intermediate diaphragm ring **037** and diaphragm setting ring **590** are fastened to each other by spline and lug **579**.

1

(b) Repair from the rear end of the shutter. (Retaining plate **174**, diaphragm setting ring **590** and flanged intermediate ring **815** removed, but not the STA-housing.)

Exposure control ring **539** with slotted cam ring **552** is positioned at setting **"B"**.

Insert flanged intermediate ring **815** so that one edge of the recess is aligned with one edge of the housing groove, as shown in Illustration Plate CN-1110-016, lower illustration, arrows.

When mounting setting ring **148**, ensure that the shutter speed lever spring **673** (= setting ring spring, see illustration plate 1110-016, bottom) contacts the setting ring pin on the correct side. Set the diaphragm ring **108**(to limit stop) and position the diaphragm setting ring. Fastened by groove and lug.

Screw on retaining plate **174** firmly, with the MX locking lever swung out.

Check: With settings **"B"** and **"1/500 sec."**, it should be possible to set both the smallest and the largest aperture with diaphragm setting ring **590**. Both depth-of-field indicators should rotate from stop to stop.

Points 2 to 11 unchanged as for CN-1110-000.

SYNCHRO-COMPUR 00-MXV Wide Angle CN-1110-034 with Light-Value Follow-up System

Cleaning of shutter	As under CN-1110-000	CN-1110-034 Plate
Lubricating instructions	As under CN-1110-000 See Lubricating Charts CN-1110-000 and CN-1110-034/035	

Assembly and adjustments

Exposure control ring 539: Smooth action and proper functioning of stop are ensured by the design. After replacing the bayonet retaining ring 730, it may be necessary to adjust the ball stop spring so that with smooth travel of the setting ring the slotted cam ring 552 is engaged efficiently. 1

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment "B".

Blades 208, 267 and 268 and their bearings must be completely free from grease. The sequence of insertion is indicated by the small numerals 1 to 6 in the illustration. The second blade 267 is recessed in the vicinity of the tensioning shaft. 2

Cover blade 268 is the sixth to be mounted on the pivot of the first blade so that the fifth blade lies between the first and sixth.

Synchronization:

Minimum distance between contacts with shutter tensioned = 0.3 mm. (measured at M setting).

X contact closes, when the blade points lie between a circle of 21.5 mm diameter and full shutter aperture.

Pre-ignition delay and contact pressure as under CN-1110-000.

Bayonet retaining ring 730, exposure control ring 539 and outer cover ring 738: When replacing any of these parts, the vertical play of the exposure control ring must be checked. It should be between 0.03 mm and 0.08 mm. If this is not the case, the play should be adjusted with the three screws 822. 1

The light value stem 192 should be easily rotatable. Before mounting the bayonet retaining ring, back off the supporting screw 545 (a set screw with pin) and insert cover plate 540 and the ball stop (heavily greased with lubricant A). 1

Set slotted cam ring to setting "B". (CN-1110-035, Plate 3, Fig. 3, arrow).

Assembly of bayonet plate and casing should be carried out as shown in Fig. 3, CN-1110-035, Plate 3. These two parts are fixed relative to each other by groove and lug.

First, lightly fasten bayonet retaining ring with screws 743, insert the supporting screw 545 (the head should not protrude), and then tighten the screws 743. 1

Light value stem 192 should be inserted into the housing so that at setting "B" an imaginary central line parallel to the key surface points at screws 612 (lower illustration). 1 & 2

CN-1110-034
Plate
1

Assembly of light value mechanism:

Diaphragm setting ring **590** — actuated by spring **824** — should automatically turn to the stop for the largest aperture (CN-1110-035, Plate 3, Fig. 2).

Flanged intermediate ring **815** must be slipped on to the outer cover ring **738** so that the edge of the flanged intermediate ring is aligned with the edge of a groove of the outer cover ring (1110-035, Plate 3, Fig. 4, arrow).

Exposure control ring **539** and slotted cam ring **552** are fixed relative to each other by groove and lug. (CN-1110-035, Plate 3, Fig. 4, arrow.) The exposure control ring should be at setting "B". Insert light value stem.

Mount the outer cover ring with the above-mentioned settings (CN-1110-035, Plate 3, Fig. 4).

Adjustment of light value mechanism:

After replacing any of the parts of the light value mechanism (815, 818, 820) or the light value stem **192**, and also after loosening and displacing the adjustment plate **818**, tooth engagement and reverse play of the light value stem 192, idler gear 820 and flanged intermediate ring 815 must be checked.

There are two versions of the adjustment plate bar **818**, and consequently two methods of adjustment.

(a) Shutter with adjustment plate 1110 10 034 818 **80**: (Shape as shown in illustration plates).

After slackening the two screws 260, the adjustment plate 818 should be shifted with both screws so that the idler gear 820 engages without play in both the flanged intermediate 815 and the light value stem 192.

After adjustment, retighten the screws 260. The light value stem 192 should still be easily rotatable.

(b) Shutter with adjustment plate 1110 10 034 818 **81**: (Not illustrated, instead of the recess in 818 80, 818 81 has an eye with an aligning collar for the shaft. The aligning collar fits into the housing).

Play between the teeth of the light value stem 192 and the idler gear 820 should be kept as small as possible. For this purpose, a set of idler gears (3 different sizes) is available, from which the suitable size should be selected.

By shifting the slackened adjustment plate, idler gear and flanged intermediate ring positions can be adjusted to eliminate play.

After adjustment, retighten screws 260. The light value stem should be easily rotatable.

C h e c k : It should be possible to set any combination of aperture and shutter speed with the light value stem 192 (1/500 and smallest aperture to "B" and largest aperture.)

Concentricity and planar trueness test

Concentricity: Maximum eccentricity between bayonet retaining ring 730 (centering diameter for quick-change mount) and outer cover ring 738 (internal diameter): 0.07 mm.

Planar trueness: Maximum wobble between bayonet retaining ring 730 and camera seating: 0.02 mm.

Points 2 to 7, 9 and 11 unchanged as for CN-1110-000.

SYNCHRO-COMPUR 00-MXV Wide-Reflex CN-1110-035
with Light Value Follow-up System

Cleaning of shutter	As under CN-1110-000
Lubricating instructions	As under CN-1110-000 See lubricating charts CN-1110-000 and CN-1110-034/35
Assembly and adjustments	See illustration plates CN-1110-000

Exposure control ring 539: Smooth action and proper functioning of the stops are ensured by the design. After replacing bayonet retaining ring 730, it may be necessary to adjust the ball stop spring so that with smooth travel of the setting ring the slotted cam ring 552 engages efficiently.

CN-1110-035
Plate
1 u. 2

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment "B".

1

The tensioning pinion should be inserted so that the first tensioning ring tooth engages in the first tooth space of the pinion (see lower illustration).

2

Bridge 621 with locking lever and intermediate lever:

1

When the opening pin in the blade ring 202 (lower illustration) springs back, the locking lever should simultaneously block the return action of the drive 514. This movement will not require adjustment even when parts have been replaced.

When replacing bridge 621 or tensioning ring 528, the shutter release must be checked. If necessary, the adjustment member of the locking lever must be bent so that the tensioning ring, shortly before reaching its rest position, swings the locking lever out so far that the latter reliably frees the drive.

The trip member of the intermediate lever must lie in front of the lug of the M-cam check lever 696. When tensioned – with M setting – the intermediate lever must swing the M-cam check lever out.

Blades 208, 267 and 268 and their bearings must be completely free from grease. The sequence of insertion can be seen in the illustration, marked by small numerals 1 to 6. The second segment 267 is recessed in the vicinity of the tensioning shaft.

2

Cover blade 268 is the sixth to be placed on the pivot of the first blade, so that the fifth lies between the first and the sixth segment.

Tensioning ring lock 569: After replacing this part, the tensioning ring release should be checked with the entire camera. If necessary, adjustments can be made to the lug of part 569.

2

Minimum contact gap with shutter tensioned = 0.3 mm
(measured with M setting)

X contact closes when the blade points lie between a circle of 21.5 mm diameter and full shutter opening.

Pre-ignition delay and contact pressure as under CN-1110-000.

SYNCHRO-COMPUR Repair instructions		Page 23
		CN-1110-035 Plate
Opening Disk 801, Pawl 802 and Blade Ring 202:		2
The rear pin of the segment should push the pawl back approx. 0.1 mm when the shutter is tensioned. When replacing any of the parts 801, 802 or 202, this function should be checked and, if necessary, the opening pin bent as required.		
When the bayonet retaining ring has been removed, the tensioning pinion 517 should be supported when pressing the opening disk into place.		
Bayonet retaining ring 730, exposure control ring 539 and outer cover ring 738:		1
When replacing any of these parts, the vertical play of the setting ring should be checked. It should lie between 0.03 mm and 0.08 mm. If this is not the case, the play must be adjusted with the screws 822.		
The light value stem 192 should be easily rotatable.		
Before assembling the bayonet retaining ring, supporting screw 545 (a set screw with pin) should be backed off and the cover plate 540 and ball stop (2.0 mm diameter) positioned (heavily greased with lubricant A). Set the slotted cam ring at Setting "B". (Fig. 3, arrow).		2 u. 3
Bayonet retaining ring 730 and housing are placed together as shown in Fig. 3. These two parts are fastened to each other by groove and lug.		2 u. 3
First, lightly fasten retaining ring with screws 743, screw in the supporting screw 545 (the head should not protrude), then tighten screws 743.		
Light value stem 192 should be inserted into the housing so that at setting "B" an imaginary line parallel to the key surface points to screw 612 (lower illustration, Plate 2).		1 u. 2
Assembly of the light value mechanism: The spring 824 should turn diaphragm setting ring 590 automatically to the largest aperture (Plate 3, Fig. 2).		1 u. 3
Flanged intermediate ring 815 should be attached to the outer cover ring 738 so that the edge of the flanged ring is aligned with a groove edge on the outer cover ring (Plate 3, Fig. 4, arrow). Diaphragm opening ring 761 should so be attached to the outer cover ring 738 that the third tooth points to the shaft of the pinion. (Plate 3, Fig. 4, arrow).		1 u. 3 1 u. 3
Exposure control ring 539 and slotted cam ring 552 are fixed relative to each other by groove and lug (Plate 3, Fig. 4, arrow). Set exposure control ring at setting "B". Insert light value stem.		1 u. 3
The outer cover ring should be mounted with all settings as described above; in the process, the tensioning pinion should be slightly turned until the idler gear (at the outer cover ring) meshes with the teeth of the tensioning ring (Plate 3, Fig. 4).		3
COMPUR-WERK MÜNCHEN		

CN-1110-035
Plate**Adjustment of light value mechanism:**

1

After replacing any components of the light value mechanism (815, 818, 820) or the light value stem 192, and also when the adjustment plate **818** has been slackened and displaced, tooth engagement and reversal play of the light value stem, idler gear and flanged intermediate ring should be checked. Two versions of adjustment plate **818** are available, and hence there are two methods of adjustment.

(a) Shutter with adjustment plate 1110 10 034 818 **80**: (Shape as shown in the illustration plates).

After loosening the two screws 260, the adjustment plate 818 with these screws is so shifted that the idler gear 820 engages without play in both the flanged intermediate ring 815 and the stem 192.

After adjustment, firmly retighten the screws 260. The light value stem 192 should be easily rotatable.

(b) Shutter with adjustment plate 1110 10 034 818 **81**: (Shape not shown. Instead of the recess for the shaft as in style 818 80, the 818 81 version has an eye with aligning collar which fits into the housing.)

The play between the teeth of the light value stem 192 and those of the idler gear 820 should be as small as possible. For this purpose, a set of idler gears is available (3 different sizes) from which the most suitable should be selected.

By shifting the adjustment plate, idler gear and flanged intermediate ring are adjusted to eliminate all play.

After adjustment, firmly retighten the screws 260. The light value shaft should be easily rotatable.

Check: With the light value stem 192 it should be possible to set all combinations of aperture and shutter speed (from 1/500 and smallest aperture to "B" and largest aperture).

With the Compur Quick-Change Mount in position and the shutter tensioned, the blades and diaphragm should clear the light-entry aperture and remain in this open position (regardless of the aperture set). On triggering the release, the diaphragm must spring to any pre-set f-stop before the blades open.

Concentricity and Planar Trueness Test

Concentricity: Maximum eccentricity between bayonet retaining ring 730 (centering diameter for quick-change mount) and the outer cover ring 738 (internal diameter): 0.07 mm.

1

Planar Trueness: Bayonet retaining ring 730: Quick-change mount seating to camera seating surface: Maximum wobble 0.02 mm.

Points 2 to 7, 9 and 10 unchanged as for CN-1110-000.

COMPUR-RAPID 00-XV CN-1112-004
with light value follow-up system – thrust cam differential

Cleaning of shutter: as under CN-1110-000

Lubricating instructions: as under CN-1110-000
See also lubrication schedules CN-1110-000 and CN-1112-004

Assembly and adjustments:
Repair instructions CN-1110-000, points 2, 5, 6 and 10 unchanged.

Exposure control ring 539: Proper functioning of the stops is ensured by the design. The exposure control ring and the film speed ring **576** must be held firmly against the housing 101 by the spring. If necessary, the spring ring **574** must be appropriately pre-tensioned. Fasten the spring ring with stud screw **571**. CN-1112-004
Plate
1

Tensioning wheel 517 and **drive 514** govern movement when the shutter is tensioned and released. If one of these parts is replaced, proper functioning must be checked in conjunction with the camera. If necessary, the lugs of the tensioning wheels should be machined down or bent slightly (CN-1110-000, plate 2).

Blade ring 202 and stop 299. If one of these parts is replaced, the check lever adjustment must be checked and reset by turning the eccentric screw 663 of the check lever 696 so that when the shutter is run down there is a gap of 0.02 to 0.2 mm. between the check lever tooth and the blade ring.

Synchronisation
Gap between contacts with shutter tensioned: 1.1 to 1.3 mm. The X-contact lever must lie up against the blade ring.

Diaphragm setting ring 590: The wedge-shaped thrust cam **185** and the diaphragm ring **108** are seated in the diaphragm setting ring. The setting ring must be held firmly against the housing by the spring; if necessary, the **retaining plate 174** must be pretensioned. Fasten the retaining plate firmly with screws **261**. 1

Concentricity and planar trueness are ensured by design features.

SYNCHRO-COMPUR 0-MXV CN-1210-051
with blade opening mechanism

Cleaning of shutter: as under CN-1110-000

Lubricating instructions: as under CN-1110-000
See also lubrication schedule CN-1110-000
The plastics knobs **509** on the tensioning ring and **118** on the diaphragm ring must not be cleaned with trichlorethylene or perchlorethylene.

Assembly and adjustments: With the shutter untensioned, the **blade opening lever 262** must, when in the "closed" position, lock the blade opening ring **252**. The lock spring for the blade opening lever must be tensioned so that on the one hand its engagement can be clearly felt, but on the other hand does not hinder the blade opening process when the tensioned, opened shutter is released.

CN-1210-051
Plate
1

Concentricity and planar trueness:

Concentricity: Maximum eccentricity between mounting tube 204 and casing 101: 0.015 mm.

Planar trueness: Maximum wobble between lens seating of mounting tube and lens seating of housing: 0.015 mm.
Maximum wobble between shutter housing camera seating and housing lens seating: 0.02 mm.

COMPUR 000-X CN-1914-000

Cleaning of Shutter

It is imperative to remove parts from the shutter for cleaning. **Wet** cleaning should be done by rinsing in clean, greasefree trichloroethylene or perchloroethylene, and **dry** cleaning with soft chamois, a hand brush or hair brush.

When cleaning parts partially coated with anti-friction lacquer (green or black), special care should be taken not to damage the lacquer. The diaphragm should preferably be cleaned dry, without disassembling it. If wet-cleaning of the diaphragm is necessary, it should be removed from the shutter first. Wet-cleaning of plastic parts must be done quickly. They must not be allowed to lie in the cleaner. Before reinstalling cleaned parts in the shutter, they should be dried thoroughly and regreased in accordance with the lubricating instructions and lubrication schedule.

Lubricating Instructions

The required lubricant (A) and PDP 38 oil can be obtained from us. Other lubricants should not be used, since only those tested by us guarantee reliable functioning.

The prescribed lubricant should be spread on a sheet of glass, picked up with a hair brush or foam rubber swab, and then carefully applied to the lubrication point. Furthermore, the lubricant must be stirred well before use.

For lubricating escapement parts, use a mixture of three parts white spirit to one part PDP 38 oil (marked red in Lubrication Schedule).

Shake well before use.

The previously cleaned parts should be dipped in this mixture and then left on clean blotting paper until the mixture has run off properly. The remaining film of oil is sufficient for lubrication. Any drops remaining in holes or at the base of teeth must be removed (blown out). The lubricating points and lubricants are indicated in Lubrication Schedule CN-1914-000.

Assembly and Adjustments

1. The **blades 208** and their bearings must be completely free from grease. The small numerals 1 to 3 in the illustration indicate the order of assembly. The blades should be preferably installed with the shutter in the "closed position". Plate 3
2. The **diaphragm segments 105** and their bearings must be completely free from grease. 4
To assemble the diaphragm, proceed as follows:
 - (a) The **blade cover 116** should preferably be laid diaphragm-side up on a support (approx. 1 in. diam.) Plate 4
 - (b) Position diaphragm segments **105** in the "open setting". For order of installation see Fig. 1. The diaphragm segments are movably seated in the blade cover 116.
 - (c) Position diaphragm cover **106** so that the guide pins of the diaphragm segments engage in the cams.
 - (d) Mount casing **101**. Casing and blade cover are fastened to each other by a pin and hole.
 - (e) Reverse casing with mounted diaphragm and fasten firmly with screws **117**.
 - (f) Check smooth diaphragm movement.
3. **Locking lever 661**. If the drive **514** or locking lever needs replacing, check engagement of the locking lever. 1 & 2
The locking lever must engage simultaneously with the thrust pawl (514) or a little later (0° to 1°30, measured at the cocking shaft).
If this is not the case, select another locking lever from the assortment. Locking levers of 6 different lengths are available (see also Supplement No. 90).

4. Synchronization

Contact gap: approx. 1.0 mm (see Fig. 2) CN-1914-000
Contact pressure: min. 35 p (see Fig. 3) 2
For synchronization the blade ring 202 must be kept in the "open" position. The contact spring 606 must also be so adjusted that contact is made when the blade tips are open to full aperture.

5. Escapement Group

The lubrication of the escapement parts is described in the lubricating instructions. When assembling the escapement, proceed as follows:

(a) Insert detent pin 305, detent wheel 310 and intermediate gear 322. 1
(b) Press eccentric 352 on to the detent shaft 357. In so doing, place the eccentric in the middle position (see Fig. 2). The torque of the eccentric must exceed 100 cmp, to prevent subsequent disadjustment. 1 & 3
(c) Swing detent pin in to the mounting tube (Fig. 2). 1
(d) Turn intermediate gear 322 90° to 120° in an anticlockwise direction and hold it (the recuperating spring lies against the mounting tube and is tensioned by this movement). It is advisable to mark the position of the recuperating spring with the detent pin swung inwards before disassembling the mechanism. Do not change the anchoring of the spring on the wheel. Plate
(e) Insert the completely assembled weight (Fig. 1). The weight 345 and pinion 347 must be easily movable relative to each other so that the weight springs back into its initial position under pressure from the weight spring 359. 1
(f) Check smooth operation of escapement by swinging the detent pin. The detent pin must automatically swing back against the edge of the casing under pressure from the recuperating spring.

Escapement Adjustment: The position of the slotted cam ring for various shutter speeds is indicated in Fig. 3. If the shutter under repair is fitted with a click-stop shutter speed setting ring, adjustments should be made with the stop engaged. 1

1/30 s, 1/60 s:
If the escapement is assembled in compliance with the foregoing instructions, these two speeds are generally within the specified tolerances.
Coarse adjustment: By altering the pre-tensioning of the recuperating spring (change spring anchoring, Fig. 2).
Fine adjustment: By means of the eccentric (Fig. 3).

1/125 s: Coarse adjustment: By bending the slotted cam ring flange.
Fine adjustment: By readjusting the eccentric.

1/500 s: By bending the shutter speed cam lug.

Shutter speeds: Measurements should be made with the slotted cam ring set and locked.

Rated speed	30	60	125	250	500	1/s
ta* — lower limit	28.0	14.4	7.66	4.43	2.63	ms
ta* — ideal	32.3	16.63	8.81	4.91	2.95	ms
ta* — upper limit	37.3	19.21	10.14	5.92	3.51	ms

6. Concentricity and Planar Trueness

Concentricity: Maximum eccentricity between rear lens centering (casing) and front lens centering: 0.01 mm
Planar Trueness: Maximum wobble between camera mounting surface and lens mounting surface: 0.015 mm
Maximum wobble rear lens mounting surface and front lens mounting surface: 0.01 mm

* ta = axial time (measured through middle of shutter, light pencil diam. 0.5 mm)

CN-1914-000
Plate

- e) Insert the fully assembled weight (Fig. 1). Weight **345** and pinion **347** must be easily rotatable in relation to each other, so that the weight will snap back to its initial position under the effect of the weight spring **359**.
- f) Check escapement for smooth operation by swinging out the detent which must be pulled against the edge of the housing by the force of the return spring.

Adjustment of escapement: The positions of the cam ring corresponding to several shutter speeds are indicated in Fig. 3. If the shutter to be repaired is provided with a speed selector ring with click stops, the adjustment must be made in a click-stop position.

1/30 sec, 1/60 sec:

When the escapement has been assembled as described above, these two speeds are generally within the allowed tolerance. Coarse adjustment: by changing the initial tension of the return spring (change spring suspension Fig. 2).
Fine adjustment: with the aid of the eccentric (Fig. 3).

1/125 sec: Coarse adjustment: by bending the flange of the cam ring.
Fine adjustment: by readjustment of eccentric.

1/500 sec: By bending the lug of the speed cam.

Shutter speed: Measurements must be made with the cam ring set and fixed.

Nominal value	30	60	125	250	500	1/s
ta — lower limit	28.0	14.4	7.66	4.43	2.63	ms
ta — actual value	32.3	16.63	8.81	4.91	2.95	ms
ta — upper limit	37.3	19.21	10.14	5.92	3.51	ms

6. Concentricity and planar trueness test:

- Concentricity: Maximum eccentricity between rear lens component (housing) and front lens component: 0.01 mm
- Planar trueness: Maximum wobble between camera flange and rear lens flange: 0.015 mm
- Maximum wobble between rear lens flange and front lens flange: 0.01 mm

* ta = time on axis (as measured through center of shutter, aperture = 0.5 mm ϕ).

SYNCHRO-COMPUR 1-MX CN-1307-000

Cleaning of shutter

It is imperative to remove parts or sub-assemblies from the shutter for cleaning, which should be done by rinsing them in clean, grease-free trichloroethylene or perchloroethylene. Escapement and delayed action mechanisms should not be disassembled for cleaning.

Before reinstalling parts in the shutter, be sure they are completely dry and regreased in accordance with the lubricating instructions.

Enameled parts and parts with filled engravings or mounted aperture scale should never be wet-cleaned. Use a soft chamois leather or brush.

Lubricating instructions

The necessary lubricants, viz. (A) and (E) oil, can be ordered from us. Other lubricants should not be used, as only those tested in our factory will ensure proper functioning of shutters.

Apply a thin film of the prescribed lubricant to a glass plate and use a fine brush or foam rubber swab to apply the lubricant at the required point. In addition, the lubricant must be stirred briskly before use.

Lubricating chart 1307-000 indicates both the points to be serviced and the required lubricants.

Assembly and adjustment

CN-1307-000
Plate

1. **Speed selector ring 539** must rotate smoothly and engage perfectly in the notches corresponding to the different speeds. If necessary, slightly tension the spring lug of the speed selector ring or the cover plate **540**.

1

2. The **tensioning ring 528** must be a play-free fit on the mounting tube. It should not bind during tensioning. When the shutter has been tripped, it must move smoothly to the stop by the force of the tension spring **521**. In the course of this operation, the escapement detent 305 and the speed lever 669 must be lifted off (this corresponds to a setting of $\frac{1}{200}$ sec).

1

When the tensioning ring is replaced, the adjustment must be checked or made in neutral position.

The adjustment must be made on the tensioning ring stop lug (Fig. 1) by refiling or compressing the lug.

1

C h e c k : The tensioning ring 528 must be in contact with the stop. In this position it must still be possible to move the angular lever **210** past it without causing the blades to move.

5

3. **Blades 208, 267 and 268** and their bearings must be completely free from grease. The sequence of installation is marked on the illustration with the small figures 1 to 5. Insert the first blade 268 at the angular lever 210. The tips of the first blade 268 and the last (fifth) blade 267 are slightly bent upwards to facilitate sliding of the blades on each other.

6

For inserting the blades it is advisable to disengage the spring **251** of the angular lever and to turn the blade ring **202** to open position.

After the housing **101** has been placed on the base plate **201**, secure the screws **109** tightly and check the operation of the blade ring.

CN-1307-000
Plate
7

4. Keep the **diaphragm blades 105** and their bearings (blade cover 116 and diaphragm cover 106) completely free from grease.
- a) For installation hold the blade cover **116** by means of the assembly fixture WAM 1-1307-000-000 (Fig. 1). Insert the diaphragm blades 105 anticlockwise, the pin at the sharp inner edge of the diaphragm blade serving as a pivot in the blade cover 116 (Fig. 2).
- b) Then position the housing **101** with mounted diaphragm ring **108** (and diaphragm cover **106**) on the assembly fixture. For this purpose, the diaphragm ring must be set at "open diaphragm" (diaphragm ring lug at release), and the flash terminal must point to the corresponding recess in the fixture (Fig. 1). Move the diaphragm ring slightly until all blade guide pins have engaged the diaphragm cover 108.
- c) Secure the blade cover **116** and the screws **117** after turning over and removing the fixture.
- d) Check diaphragm for smooth operation.

5. Secure the **blade plate 225** by means of two long screws **234** on either side of the delayed action mechanism and by the two short screws **230**. 6

Apply glyptal to the threads of the screws.

6. With the screw **211** firmly tightened, the **angular lever 210** and the **X-angle lever 250** must move smoothly on the sleeve. 5

Vertical play of the angular lever 210 must not exceed 0.05 mm.

The spring **213** of the angular lever must rest only lightly on the base plate and should not rub against it.

7. **M-detent 640** and **idler 643** must be given the relative position shown in Fig. 3 in order to permit perfect operation of the contact spring. 4

Move the hook-in lug **248** at the edge of the housing to the stop and secure screw **612** tightly.

8. **A-plate 621** 4

a) Check level position of locking lever and shift lever.

b) Insert plate and tension M-detent **305** slightly until the plate is perfectly seated. Lightly screw down the plate with the aid of screw **680**.

c) Swing the shift lever **657** until it guides the trip pin of the anchor plate, **634**, (on M-plate 622) with its fork. It must swing back into neutral position under the force of the anchor plate spring **647**. 6

d) Connect A-plate and synchronizing lever **685** loosely by means of screw **679**. 4

e) Insert contact spring **606**, spacing collar **675** and auxiliary spring **518** (Fig. 3). 4

f) Tighten both screws (679, 680) and insert the spring for the synchronizing lever **687**.

C h e c k : The detent must be easy to tension and must swing out the locking lever during its return travel.

Locking lever 664 (Figs. 1 and 2), B-lever 693, speed lever 669, T-lever 694 and the release 508 must move normally under the force of the corresponding springs.

1a4

CN-1307-000
Plate
8

9. Synchronization

In "M" position, the lug 657 of the shift lever must be about 0.2 mm away from the contact spring 606 (Fig. 6).

Contact clearance = 0.8 to 1.2 mm (Fig. 6).

Contact pressure in M-position = 10 . . . 20 gf (Fig. 7).

Adjustment of M-contact at 1 (Fig. 6).

(Measuring procedure: slowly tension shutter; during this operation, the shift lever 657 will swing outward and drop back. Stop tensioning in this phase and slowly guide the tensioning ring back. The shift lever will then press the contact spring 606 against the stop, as a result of which the spring must be deflected 0.2 . . . 0.4 mm (Fig. 7). Hold the tensioning ring down and interrupt the contact by means of counterpressure, as shown in Fig. 7).

M-firing delay as measured from contact making to halfopen shutter = 16.5 ms ± 10%.

X-contact closes when the tips of the blades occupy a position between 25.0 diameter and full aperture.

Adjustment of X-contact at 2 (Fig. 6).

Adjustment of firing delay

for settings of 1 sec . . . 1/200 sec:

by bending the locking lever — Fig. 6, adjustment at 3 —

for a setting of 1/400 sec:

by bending the spring 697 of the locking lever (Fig. 6), adjustment at 4 —

The firing delay becomes shorter as the spring tension is reduced, and vice versa.

8

10. The **X-control lever 254** runs with a pivot in the **opening lever 252**. Check operation of both levers after tightening the screw **258**.

5

The end of the X-control lever 254 and the shift lever 657 must lie on a mutual plane in order to guarantee perfect functioning (Fig. 2). If necessary, align the X-control lever accordingly.

11. **Delayed action mechanism 400**. The duration of delay is between 9 and 12 sec. The timing of the instant at which the tensioning ring hook slips off the hook wheel 408 can be influenced by bending the lug (Fig. 1). The hook wheel 408 will thus adopt a different angular position, so that the delay is changed within certain limits. In addition, the hook wheel must turn in such manner as to drive the delay mechanism properly after tripping (9-12 sec), in other words, it must not slip off immediately. During operation, the hook must not exert any pressure on the plate.

3

CN-1307-000
Plate
2

12. Escapement 300

- Hook the detent spring **309** in the first notch.
- Turn the idler **314** so that the return spring (Fig. 1) will neither jam when the detent **305** is swung in nor come into contact with the pinion of the detent wheel **310** when the detent is swung out (to the first tooth).
- Install the escapement; tighten screws **304** and **323** only slightly.
- Slide the escapement on the side of the anchor slowly from the outside to the inside until the tensioning ring 528 operates smoothly.
- Speed adjustment** (keep to stated order of operations!)

1 second: Rotate escapement about the screw 304 until the 1 sec speed is within tolerance. If the speed should be appreciably too fast, then increase the tension of the detent spring (Hook the spring (309) in one of the next notches.)

With tensioned shutter it must be possible to lift the anchor plate about 0.2 mm from the tensioning ring (Fig. 3).

A minimum play of 0.2 mm is required between fully swung-in detent 305 and tensioning ring lug (Fig. 1):

The pallet should engage the corresponding tooth of the balance wheel at about $\frac{1}{2}$ to $\frac{3}{4}$ of the height of the tooth (Fig. 4). If necessary, the corresponding adjustment can be made at the locking lug of the lower plates 302 (Fig. 2).

Secure the escapement free from tension with the aid of the screws **304** and **323**.

$\frac{1}{10}$ second: by bending the detent pin (Fig. 5).

$\frac{1}{100}$ second: by varying the width of the slot in the speed selector ring (Fig. 5).

With these three adjustments all other speeds are automatically adjusted as well (Fig. 5).

Shutter speeds: 1; 2; 5; 10; 25; 50; 100; 200; 400 (1/sec)

Tolerances: $\pm 15\%$ $\pm 20\%$

13. Concentricity and planar trueness test

Concentricity: Maximum eccentricity between base plate 201 and housing 101 : 0.0 mm

Planar trueness: Maximum wobble between mounting tube of front lens component and rear lens flange: 0.01 mm.

COMPUR 000-X CN-1915-001
Tensioning shutter

Cleaning of shutter: as under CN-1914-000
Lubricating instructions: as under CN-1914-000; lubricating chart CN-1915-001

Assembly and adjustment:

CN-1915-001
Plate
3

- 1. The **blades 208** and their bearings must be completely free from grease. 3
- 2. The **diaphragm blades 105 and the shim 119** as well as their bearings must be completely free from grease. 3
- 3. The **cam ring 552 and the speed selector ring 539** are fixed relative to each other by groove and lug. If necessary, bend the spring lug to improve stop engagement. 1
- 4. The **thrust pawl spring 533** must be plane, and its long end must be in contact with the thrust pawl rivet. 1

5. Synchronization

Contact clearance: min. 0.3 mm (see Fig. 3) 1
When adjusting the contact spring, care should, in addition be taken to ensure a sufficient overlap between the spring tip and the detent lever lug **242**.
Contact must be made when the tips of the blades are clear of the full aperture of the shutter.

- 6. **Locking lever 661:** If the drive 514 or the locking lever has to be exchanged, the locking lever must be checked for correct operation. 1 a. 2
The locking lever should operate simultaneously with or slightly later than the thrust pawl (514) (0° to 1°30' as measured at the tensioning shaft). If this is not the case, another locking lever should be chosen. For this purpose, six locking levers of different length are available (see note 90). The set of levers is marked 0 - 5.

7. Adjustment of escapement:

The positions of the cam ring corresponding to speeds of $\frac{1}{250}$ and $\frac{1}{30}$ sec are indicated in Fig. 2. 2
If the shutter to be repaired is provided with a speed selector ring with click stops, the adjustment should be made in a click-stop position.
 $\frac{1}{30}$ sec: by changing the initial tension of the detent spring (344) 2
 $\frac{1}{60}$ sec: by bending the detent pin (305)
 $\frac{1}{125}$ sec: by bending the cam ring lug (552) Fig. 2
 $\frac{1}{250}$ sec: by bending the cam ring lug (552) Fig. 2

Shutter speeds:

Measurements must be made with the cam ring set and fixed.

Nominal value

t_a - lower limit	28.0	14.4	7.66	4.43 ms
t_a - actual value	32.2	16.63	8.81	4.91 ms
t_a - upper limit	37.3	19.21	10.14	5.92 ms
$(t_a = \text{time on axis, as measured through the center of the shutter})$				

8. Concentricity and planar trueness test:

Concentricity: Maximum eccentricity between rear lens component (housing) and front lens component: 0.01 mm.

Planar trueness: Maximum wobble between rear lens flange and front lens flange: 0.01 mm.

COMPUR 000-X CN-1916-001

Single-action shutter

Cleaning of shutter: as under CN-1914-000

Lubricating instructions: as under CN-1914-000,
see also lubrication chart CN-1916-001 (CN-1915-001)

Assembly and adjustment: See picture plates CN-1915-001 and repair instructions CN-1915-001, items 1 through 5, 7 and 8 unchanged.

CN-1916-001
Plate
1

9. Slip-on pinion 722, tensioning ring 528 and drive 514:

If one of these parts is replaced, the sequence of operation should be checked. The thrust pawl (514) must in any case operate shortly before the shutter is tripped by the tensioning ring 528 (min. 50' to max. 2° as measured at the tensioning ring). This ensures that the shutter does not open if the tensioning process is interrupted prematurely.

If this requirement is not met, another tensioning ring 528 should be selected. 9 tensioning rings are available, in each of which the last tooth is of different height (see note 109).

COMPUR 000-X CN-1916-004

with wedge differential and film speed setting

Cleaning of shutter: as under CN-1914-000

Lubricating instructions: as under CN-1914-000
see lubrication chart CN-1916-001 (CN-1915-001)

9. Assembly and adjustment: See also picture plates CN-1915-001 and CN-1916-001
Repair instructions CN-1915-001, items 1 through 5, 7 and 8 unchanged. Item 6 not applicable.

CN-1916-004
Plate
1

Slip-on pinion 772, tensioning ring 528 and drive 514:

If one of these parts is replaced, the sequence of operation should be checked. The thrust pawl (514) must in any case operate shortly before the shutter is tripped by the tensioning ring 528 (min. 50' to max. 2° as measured at the tensioning ring). This ensures that the shutter does not open if the tensioning process is interrupted prematurely.

If this requirement is not met, another tensioning ring 528 should be selected. 9 tensioning rings are available, in each of which the last tooth is of different height (see note 109).

10. Aperture setting ring 590:

The recess in the ring serves as a bearing for the **thrust wedge 185**, the prism face of which is pushed by the feeler pin. The wedge thus is in contact with the oblique side of the film speed ring 576 (see Fig. 1).

Check: Clearance between shutter flange and contact point of feeler pin on thrust wedge 185:

At a setting of 250/22/12° DIN = 3.6 mm

At a setting of B/2.8/33° DIN = 7.0 mm

1

Compur Shutter Repair Manual

Section 7

Repair instructions for special shutters

SYNCHRO-COMPUR
Repair Instructions for Special Shutters

Page 1/S

SYNCHRO-COMPUR 00-MXV CS-1110-556
for Zeiss Ikon AG, Stuttgart

- Cleaning the shutter:** as under CN-1110-000
- Lubrication Instructions:** as under CN-1110-000
See also Lubrication Schedule CN-1110-000,
CN-1110-024 and CN-1110-556
- Assembly and Adjustments:** See also plate CN-1110-024 and repair instructions
CN-1110-000, points 2, 4-7, 9-11 unchanged.

CN-1110-020
CN-1110-024
CS-1110-556
Plate

Exposure control ring: proper action is ensured by the design.
(For replacement see under bayonet retaining ring.)

Tensioning pinion 517 must be installed so that the first tooth of the tensioning ring lies between the tensioning lug and the first tooth of the tensioning pinion.

3

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, point 3, adjustment "B".

Blades 208 and their bearings must be absolutely grease-free. The order in which they must be inserted is indicated in the figure by the small numerals 1 to 5.

3

Diaphragm opening ring 761 must be so positioned that the third tooth from the left points to the centre of the tensioning shaft.

Coupling 722: When slipping this part on, the tensioning shaft (tensioning pinion) must be supported. The coupling must be pressed on so that there is vertical play on both the housing side and the side towards the shutter mount 745.

Exposure control ring 539 must be positioned so that the middle one of the three grooves engages the lug of the cam ring 552.

1

Index ring 771: Depress MX lock and insert the detent spring under the setting ring lug. Index ring and housing are fixed relative to each other with groove and pin. After installing the shutter mount 745, fix the index ring in position with **screws 612**.

1

Setting ring 148 must lie flat, without protruding, in the circular groove of the housing.

1

Follow-up shaft 192: When replacing this part, the vertical play must be checked and adjusted with the **spacers 762** (0.2 and 0.05 mm thick). Vertical play must not exceed 0.07 mm.

2

Shutter mount 745: The diaphragm setting ring **590** must be seated without interstices on the mount and be set so that the red spot between red 10 and 14 lies above the red line on the mount. The rangefinder control cam **775** must be turned clockwise right up to the stop (as seen from inside of mount).

1

Check functioning of levers (see Fig.). The "A" setting lever **657** must lie against the follow-up lever **192** and both must lie in the same plane.

2

When setting the mount in place, first insert the contact strip, then the tensioning shaft. The mount must lie against the index ring **771** without any interstice. If this is not the case, the diaphragm setting ring coupling (at "A") must be depressed and the diaphragm setting ring **590** turned slightly until the mount is properly seated. In this position the shutter must be held firm and the tensioning shaft actuated. Fix shutter mount firmly in place with **screws 753**.

2

Check: When the shutter is tensioned, diaphragm and blades must clear the shutter aperture completely. The tensioning shaft must run back automatically and trip the shutter. When the rangefinder control cam **775** is actuated, the diaphragm must close step by step.

If the shutter mount is replaced, the lens focus must be checked and, if necessary, readjusted in accordance with the camera manufacturer's instructions.

When replacing the shutter mount **745**, the rangefinder control cam **775** or the follow-up shaft **192**, the position of the rangefinder control cam lug **775** must be checked and the lug of the **rangefinder lever 776** adjusted so that the rangefinder control cam is positioned as described below.

It is advisable to adopt the following procedure:

- (a) set the diaphragm setting ring at light value 40 and turn the rangefinder control cam clockwise (as seen from rear) as far as it will go.
- (b) Tension and trip shutter.
- (c) Turn rangefinder control cam **775** back again until the diaphragm lock **765** engages in the marked tooth gap of the diaphragm ring **108** (corresponds to f/16). The centre of the rangefinder control cam lug must then, for proper alignment, be at an angle of $111^{\circ} 35' \pm 35'$ (corresponds to a range of 2.65 m).

If the deviation is greater than $\pm 35'$, the rangefinder lever lug must be bent as described.

2

Cover plate 540 must be so positioned that the uncovered hole lies over the detent pin **305**. (Plate CN-1110-000/5).

1

Bayonet retaining ring 730: Grease click stop ball and insert in bayonet retaining ring. Check position of exposure setting ring.

1

The bayonet retaining ring and the housing are fixed relative to each other with pin and groove. The lug of the cover plate 536 must lie in the recess of the bayonet retaining ring (must not jam).

Tighten **screws 260** firmly to hold bayonet retaining ring in position.

1

Check: When set for "manual" or light values, the exposure control ring must rotate from 500 to "B".

When replacing the bayonet retaining ring, the following truing operations must be carried out.

For interchangeable front components, the distance between the face of the tube and the lens seating of the bayonet retaining ring is 3.0 — 0.02 mm (see dimension sketch of Specifications 1110-020, dimensions 16, 15 and 3.0 mm). Truing is carried out by turning out the lens seating of the bayonet ring while it is firmly screwed into the shutter. In addition, the centering diameter must be enlarged by turning to $35.8 + 0.015$ mm (for checking see "Concentricity and Planar Trueness Test").

During truing special care must be taken to ensure that no chips reach the blades or the inside of the shutter (cover carefully).

If you are unable to do the turning work yourself, we will gladly carry out the repair. In such case, please send us the entire shutter.

Concentricity and Planar Trueness Test

Concentricity: Maximum eccentricity between mounting tube **204** and housing **101**: 0.01 mm. Maximum eccentricity between mounting tube **204** and 35.8 mm centering diameter of the bayonet retaining ring **730**: 0.01 mm.

Planar Trueness: Maximum wobble between camera seating of shutter mount **745** and lens seating of housing **101**: 0.03 mm.

Maximum wobble between lens seating of housing and lens seating of mounting tube **204**: 0.015 mm.

Maximum wobble between lens seating of mounting tube and lens seating of bayonet retaining ring **730**: 0.015 mm.

SYNCHRO-COMPUR
Repair Instructions for Special Shutters

Cleaning the shutter:

SYNCHRO-COMPUR 0-MXV CS-1210-671 to CS-1210-678
for Linhof, Munich

- Cleaning the shutter:** As under CN-1110-000
- Lubricating Instructions:** As under CN-1110-000
See also Lubrication Schedules CN-1110-000 and CS-1210-671
- Assembly and Adjustments:** See plates CS-1210-671, CN-1110-022 and CN-1110-000;
Repair Instructions CN-1110-000, points 2 and 5 to 11 unchanged
- Tensioning pinion 523, Tensioning Ring 528, Bridge 621** with locking lever and **Sleeve 746** CS-1210-671
— see **Repair Instructions CN-1210-022.** Plate

Rocker 040 is seated on the pivot of the diaphragm ring 108. Between the rear of the shutter mount and the rocker is the **spacer 733**. The rocker is guided by the cam ring 020 and the smaller pin engages in the slot of the indicator ring **034**. 2

Indicator Rings 032 and **034** are positioned symmetrically to the range indicator. 2

Friction ring 594 with **Spring 595** must snap evenly into and lie flat in the diaphragm setting ring **590**.
The friction ring must then be turned so that when the smallest stop is set the fourth tooth from the right is aligned with the index mark of the shutter mount **745**. 1

Flanged Ring 815 and **sleeve 746** are fixed relative to each other by a groove and pin (long). The flanged ring must engage the friction ring. 1

Lock ring 567 must be snapped into position so that the gap in the ring lies opposite the cam ring lobe (protruding lobe). 1

Exposure control ring 539: Turn the cam ring anticlockwise to the stop ("B" setting) and set the diaphragm at the smallest f-stop. Insert both balls.
Position exposure control ring so that the cam ring lug lies in the groove of the exposure control ring. The ball must then engage in the first click stop notch. 1

Retaining ring 058 must be positioned so that the depression on the lower side of the ring lies above the click stop ball. Fasten by tightening screws **059** firmly. 1

Concentricity and Planar Trueness Test

- Concentricity:** Maximum eccentricity between the mount **745** and sleeve **746**: 0.015 mm.
- Planar Trueness:** Maximum wobble between lens seating of mount and lens seating of sleeve: 0.015 mm.

SYNCHRO-COMPUR 0-MXV CS 1210-660

with blade opening mechanism and carrier mount

Cleaning the Shutter: As under CN-1110-000**Lubricating Instructions:** As under CN-1110-000
See lubrication schedules CN-1110-000**Assembly and Adjustments:** See Plates CS-1210-660, CN-1210-051 and CN-1110-000,
Repair Instructions CN-1210-051 and CN-1110-000.

The **exposure control ring 583** and **driver ring 575** are fastened to each other by CS-1210-660 the driver screw **579**. The first step in disassembly is the removal of this screw. It is also Plate advisable to remove screw **584**. 1

The exposure control ring must be seated in the driver ring without any play. If necessary, the snap catch must be adjusted with screw **584**.

When inserting the complete shutter into the **mount body 020**, it must be ensured that the shutter mounting screw (at the rear of the shutter) lies in the groove of the mount.

Screw-on ring 102 must be tightened firmly.

COMPUR 000-X CS-1914-102
for the Agfa-Gevaert AG Munich

Cleaning the Shutters	as under CN-1914-000	
Lubricating Instructions:	as under CN-1914-000 See Lubrication Schedule CN-1914-000	
Assembly and Adjustments:	See Plates CN-1914-000 Repair Instructions CN-1914-000 Points 1 to 4 and 6 unchanged	CN-1914-102

1. Range Scale 027 and Shutter Speed Setting Member 539
2. Range Scale 028 and Diaphragm Setting Member 590
- Plate

In both cases the range scales and setting members are fixed in position relative to each other (see Fig. 2). The range scales must lie snugly against the setting members. When inserting the setting members in the **cover cap 540**, care must be taken to ensure that the shutter speed setting member lies on the bottom of the cap and that the recess of the diaphragm setting member lies in the vicinity of the diaphragm setting member lug. Check functioning and stop engagement of the setting members after insertion in the casing.

3. Knobs 177 are pressed on to the setting members.
4. Casing 101 and cover cap 540 are fixed in position relative to each other by a lug in the cover cap and a groove in the edge of the casing on the one hand, and by a locking pin in the base plate and a hole in the cover cap on the other.
- 1

5. Functioning of the completely assembled shutter

At Setting "A": The diaphragm ring 108 is pressed against the lug of the slotted cam ring 552 by the spring 578. This involves no change in the association of shutter speeds and f-stops.

Shutter speed	31.25	12.40	4.92	2.90	1.95	1.95
ta in ms ¹	32.6	13.19	5.34	3.18	2.16	2.08
f-stop	2.8	4	5.6	6.9	8	11.
Aperture check diam. ²	8.16	5.78	4.08	3.35	2.89	2.037
Light value	8	10.3	12.7	14	15	16

At Setting $\frac{1}{2}$ (flash) the shutter speed is 1/30 s. The f-stop can be freely selected.
At Setting "B": The shutter can be kept open in the usual manner for any desired length of time. The f-stop can be freely selected.

6. Escapement Assembly: As under CN-1914-000, Point 5.
7. Escapement Adjustment: By turning the eccentric. Adjustments should preferably be made with the completely assembled shutter at Setting "A". The cover plate 546 above the eccentric must be removed beforehand. The slotted cam ring positions for the various shutter speeds can either be seen from Fig. 1 or be determined by means of the check diameter of the aperture (see above table).

1 ta = axial time (measured through middle of shutter, light pencil diam. = 0.5 mm)
2 Check diam. = diam. of inner circle of pentagon.

COMPUR 000-X CS 1919-301
for the Kodak AG, Stuttgart

- Cleaning the Shutter:

as under CN-1914-000
- Lubricating Instructions:

as under CN-1914-000
See Lubrication Schedule CN-1914-000
- Assembly and Adjustments:

See Plates CN-1914-000
Repair Instructions CN-1914-000
Point 1 to 6 unchanged

CN-1914-301
Plate
1. Click stop lever 584 is pressed against exposure control ring 535 by the spring 585;
(Click stop for "B", see Fig. 2).

1
2. Slotted cam ring 552 and exposure control ring 539 are fixed in position relative to
each other by lug and groove.

1
3. Shutter speed setting shaft 219: Insert at Setting "B". The driver pin 545 must be
placed in the position shown in Fig. 1.

1

SYNCHRO-COMPUR

Instructions for repairs on special shutter types

Page 7/s

SYNCHRO-COMPUR 00-XV CS-1112-455

for Messrs. Voigtländer, Braunschweig

Cleaning of shutter: as under CN-1110-000

Lubricating instructions: as under CN-1110-000
see also lubrication charts CN-1110-000 and CN-1110-034/035

Assembly and adjustment:
See also picture plates CN-1110-035 and CN-1110-000

Items 2, 5, 6 and 7 unchanged as under CN-1110-000

Tensioning pinion, tensioning ring and drive: as under CN-1110-000, item 3, "B"-type adjustment.

Insert the tensioning pinion so that the first tooth of the tensioning ring engages the first tooth space of the pinion.

Bridge 621 and locking lever 569: As the opening pin snaps back in the blade ring 202, the locking lever must lock the reverse motion of the drive 514. In the design used, this motion is ensured even after replacement of parts.

When bridge 621 or tensioning ring 528 have been replaced, a check must be made of shutter triggering. If necessary, bend the adjusting member of the locking lever so that shortly before reaching its neutral position the tensioning ring swings out the locking lever far enough to ensure definite release of the drive.

Blades 208, 267 and 268 and their bearings must be completely free from grease. The sequence of assembly is shown by the small numerals 1 to 6 in the illustration. The second of the blades 267 has a recess accommodating the tensioning shaft.

Tensioning ring lock 269: After replacement of this part, check the release of the tensioning ring with the aid of the camera. If necessary, adjust the lug of part 269.

Opening disk 801, pawl 802 and blade ring 202: When the shutter is tensioned, the rear opening pin of the blade ring must push the pawl back about 0.1 mm. If one of the parts 801, 802 or 202 is replaced, this function must be checked and, if necessary, the opening pin bent accordingly.

Smoothness of operation and the click-stop positions of the speed selector ring 539 are invariable due to the design used. After replacement of the bayonet retaining ring 730 the ball stop may, if necessary, be adjusted so as to ensure perfect engagement of the cam ring 552 combined with smooth operation of the speed selector ring.

Bayonet retaining ring 730: Before inserting this part, set the cam ring to "B" (Fig. 3) and place the ball greased with lubricant A on the ball stop spring.

CS-1112-455
CS-1110-035
plate

2

1

2

2

1 a 2

3

CS-1112-455
plate CS-1110-035

The bayonet retaining ring and the shutter are fixed relative to each other with pin and groove (Fig. 3).

3

Position the **pinion 757** so that the collar of the shaft runs in its countersink.

1

When the shutter is inserted, the pinion **757** must engage the teeth of the tensioning ring (Fig. 4).

3

Secure screws **260** tightly.

1

Speed selector ring 539 and **cam ring 552; diaphragm coupling ring 590** and **friction ring 594** are fixed relative to each other with groove and lug.

1

3

Before mounting the friction ring, grease the click stop ball (and the click stops of the outer cover ring 738) heavily with lubricant A.

Insert the **lock spring 595** and check operation of the diaphragm coupling ring 590 over the entire aperture range. If necessary, correct the initial tension of the spring.

1

Insert the **diaphragm opening ring 761** into the diaphragm cover ring so that the third tooth space points to the shaft of the pinion (Fig. 1).

1

Outer cover ring 738: Before positioning the completely mounted outer cover ring on the shutter turn the setscrews **822** in the bayonet retaining ring 730 back all the way. The shutter speed setting is of no consequence for mounting the outer cover ring.

1

Tighten screws **739** firmly.

1

Setscrews 822: These screws serve to adjust the vertical play of the speed selector ring 539. Vertical play must not exceed 0.15 mm over the entire range of motion.

1

Concentricity and planar trueness test:

Concentricity: Maximum eccentricity between bayonet retaining ring 730(centering diameter for quick-change mount) and outer cover ring 738 (inside diameter): 0.07 mm

Planar trueness: Bayonet retaining ring 730: Maximum wobble between seating face of quick-change mount and camera flange: 0.02 mm.

COMPUR 000-X-Reflex CS-1912-206
for Messrs. Rollei-Werke, Brunswick

Cleaning of shutter : Same as under CN-1914-000

Lubricating instructions : see lubricating chart CS-1912-206

The necessary lubricants (A and C) and the oil PDP 38 can be ordered from us. Other lubricants should not be used, as only those tested in our factory will ensure proper functioning of shutters. Distribute the prescribed lubricant on a glass plate and carefully apply it to required point with the aid of a fine brush or a foam rubber swab. The lubricant should be stirred briskly before use.

Dip the well-cleaned parts in this mixture and leave them to dry on clean blotting paper. The remaining oil film is sufficient for lubrication. Any drops in holes or in the teeth of gears must be removed (by blowing).

If the escapement was cleaned without disassembly, the bearings of the gears and detent must be lightly lubricated with PDP 38. Then remove any traces of oil from the plates, particularly from the underside of the lower plate 302, by means of a soft rag. If necessary, lightly lubricate the gear teeth with the oil mixture using a brush. Take care to avoid the formation of oil drops.

Assembly and adjustment:

CS-1912-206
Plate

1. The **aperture selector ring 590** and the **engraving strip 591** as well as the **film speed ring 576** and the **engraving strip 541** are fixed relative to each other by a lug and groove.
2. **Film speed ring 576** or **cam ring 552**. The torque (stiffness) of the film speed ring is determined by the force of the spring lug of the cam ring. If necessary, readjust the torque by bending the spring lug.
3. **Supporting plate 174**. If this or the blade opening ring **252** is exchanged, it is necessary to check the trapping position. The gap between the lug of the blade opening ring and the detent lever must at least be 0.05 to 0.1 mm. For adjustment, use the eccentric (Fig. 1).
The diaphragm opening ring **761** must reliably swing out the detent lever far enough for the blade opening ring **252** to open the blades fully. The detent lever must be reliably reset by the spring **245**.
4. **Locking lever 661**. If the drive **514** or the locking lever have to be replaced, it is necessary to check the engagement of the locking lever:
The locking lever must engage its counterpart simultaneously with the thrust pawl (514) or slightly later (0° to 1° 30' as measured at the tensioning shaft).
If this is not the case, select another locking lever from among the six different types that are available (see also Note 90).
5. **Synchronization:**
Contact clearance: approx. 1.0 mm (see Fig. 2)
Contact pressure: min. 35 g (see Fig. 3)
The blade ring **202** must be in open position. In addition, the contact spring **606** must be adjusted so that contact is made when the tips of the blades lie between an aperture diameter of at least 10 mm (full shutter aperture = 12 mm dia.).
6. Insert the **escapement 300** into the tensioned shutter, push it inside and lightly fix it with the screws **304** and **312**. In this position the effect of the escapement is greatest (slowest speed 1/2 sec).
Speed adjustment - Fig. 2 - (with cam ring 552 in position)
1/2 sec: From the above position rotate the escapement uniformly outwards (towards the shutter edge) about the screw **312** until the speed is within the prescribed tolerance. Tighten both screws firmly.

CS-1912-206
Plate
3

- $\frac{1}{15}$ sec: Bend the pin of the low-speed detent **305** (Fig. 1).
 $\frac{1}{250}$ sec: Bend the pin of the high-speed detent **341** (Fig. 1).
 $\frac{1}{500}$ sec: The drive must not come into contact with the high-speed detent during operation. If necessary, readjust the $\frac{1}{250}$ sec.

Shutter speeds: Perform measurement with adjusted and fixed cam ring.

Nominal value	2	4	8	15	30	60	125	250	500
*ta - upper limit of variation	580	291	146	73.4	37.1	19.0	10.96	5.72	3.81
ta - nominal	500	251	126	63.3	32.0	16.40	8.57	4.65	2.70
ta - lower limit of variation	430	216	108	54.4	27.5	14.1	7.37	3.77	1.75

*ta = time on axis (as measured through center of shutter, aperture = 0.5 mm dia.)

7. **B-cam 185, blade opening ring 252, aperture selector ring 590 and diaphragm cover 106.** To facilitate assembly, align these four components as follows: 2 and 5
Align them with the lug of the opening ring **252**. Then continue alignment so that the guide groove of the selector ring **590**, the control portion of the B-cam and the lug of the diaphragm cover **106** are flush or coincide with the aforementioned lug.
8. The **base plate 201** is mounted in the housing **101**. For **disassembly**, proceed as follows: 5
Remove the bayonet retaining ring **730** and supporting plate **174**. Hold the shutter with its front facing down and place the edge of the housing on a suitable ring or strip. Loosen the four housing screws **109** and carefully push the base plate out of the housing by tapping on the screws. 1 and 2
Assembly: Introduce the base plate with the screws **109** into the housing and tighten the four screws crosswise. 5
9. The **blades 208** and their bearings must be completely free from grease. In the illustration, the order of insertion is marked by the figures 1 to 3. It is advisable to insert the blades in "closed position". 5
10. The **spacer 224** is made of thin plastic. Be careful not to damage it during disassembly. For reassembly, the spacer must be completely flat. 5
11. The **thrust pins 120** must be firmly seated in the base plate. After pressing in the pins check the smoothness of operation of the blade ring. 5
12. The **diaphragm blades 105** and their bearings must be completely free from grease. To assemble the diaphragm, proceed as follows: 6
a) Place the blade cover **116** with the diaphragm side facing up on a support of approx. 25 mm diameter.
b) Mount the diaphragm blades **105** in "open position". For the order of insertion, see Fig. 1. The blades are seated in the blade cover **116** so that they can be rotated.
c) Mount the diaphragm cover **106** so that the guide pins of the diaphragm blades engage the guide grooves.
d) Attach the housing **101**. The housing and the blade cover are fixed relative to each other by a pin and a hole.
e) Once the diaphragm is assembled, turn the housing round and secure it with the screws **117**.
f) Check the diaphragm for smooth operation.
13. **Concentricity test:**
Maximum admissible eccentricity between centering diameter of housing (17.5 mm) and front lens centering flange: 0.08 mm.
Maximum eccentricity between centering diameter of housing and centering diameter of bayonet mount (39.7 mm): 0.08 mm.

SYNCHRO-COMPUR O-MX CS-1210-277
manufactured for Rollei-Werke of Brunswick

Cleaning: Same as under CN-1110-000

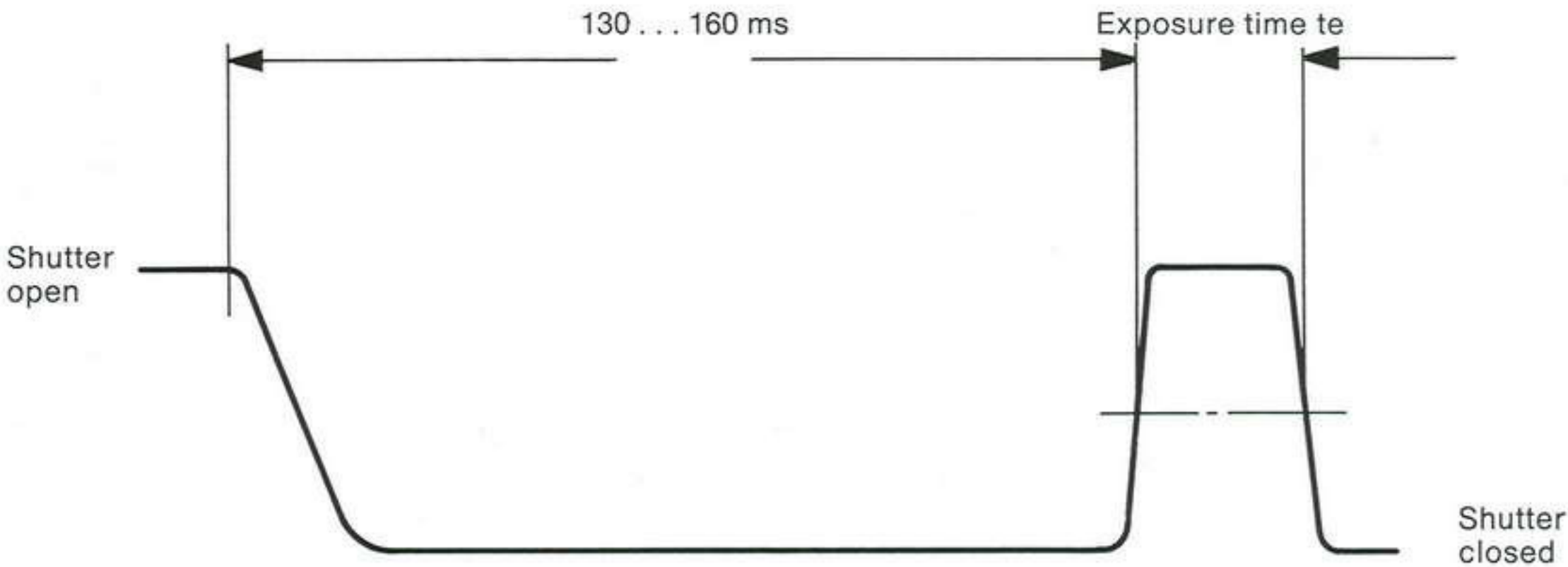
Lubricating instructions: Same as under CN-1110-000
In addition, see lubrication schedule
CN 1110-000 and CS-1210-277

Assembly and adjustment:

Items 2, 4 and 7 through 11 of the Instructions CN-1110-000 apply without any changes.

CS-1210-000
Plate No.
1

- 1. The **stiffness of the speed selector ring** is given by the design. 1
- 2. **Cam ring 552.** When removing the cam ring, it is advisable to press on the tensioned ring 528 to prevent it from rising and the balls or segments from falling into the shutter (see section on tensioning ring). 4
- 3. The **tensioning ring 528** runs on $15\frac{1}{32}$ " balls. These are guided between the plastic segment **222** (Fig. 2). When dismantling the shutter, take care not to drop the balls and the segments into the shutter. It is therefore advisable to turn the shutter upside down when removing the tensioning ring. During reassembly, first grease the groove (mounting tube **204**) with lubricant A. Then insert the segments 222. After inserting the tensioning ring, introduce the balls through the opening in the mounting tube 204 (see arrow in Fig. 2), shifting the segments as required. Then press the tensioning ring down and hook the tension spring **521** into place and insert the pinions 011-522 and 517 (Fig. 1). In order to prevent the tensioning ring from coming loose, immediately mount the cam ring **552** and the lock ring **567**. 5
If the tensioning ring is exchanged, observe the instructions given under 4. 4
- 4. **Tensioning pinion 517, tensioning ring 528 and drive 514** 5
If one of these parts is exchanged, check the locking functions of the shutter.
 - a) The M-detent should lock simultaneously with or any time before the opening pin locks (see Instructions for repairs No. CN-1110-000, page 1, item 3).
 - b) With the shutter tensioned, the tensioning ring 528 should be locked by the tensioning-ring lock 569 and the drive 514 by the locking lever 621. Between the lug of the drive pinion 517 and the drive there must be a clearly visible gap. 5
This sequence of operations is determined by the width of the lug of the tensioning pinion **517**.
If necessary, replace the tensioning pinion and/or remachine the lug (see Instructions for repairs No. CN-1110-000, page 1, item 3).



- 5. **The delay mechanism** (Fig. 3) is designed to delay the operation of the tensioning ring and thus internal shutter tripping by a defined amount. 5

SYNCHRO-COMPUR

Instructions for repairs on special-purpose shutters

If this value is not reached, replace the anchor **534** and/or the balance wheel **632** or slightly oil them, if necessary.

6. Swing the **escapement 681-300** about the screw 304 until it rests against the mounting tube 204. Then tighten the screws **304** and **323**.

1/500 second (CN-1110-000, plate 9, Fig. 5):

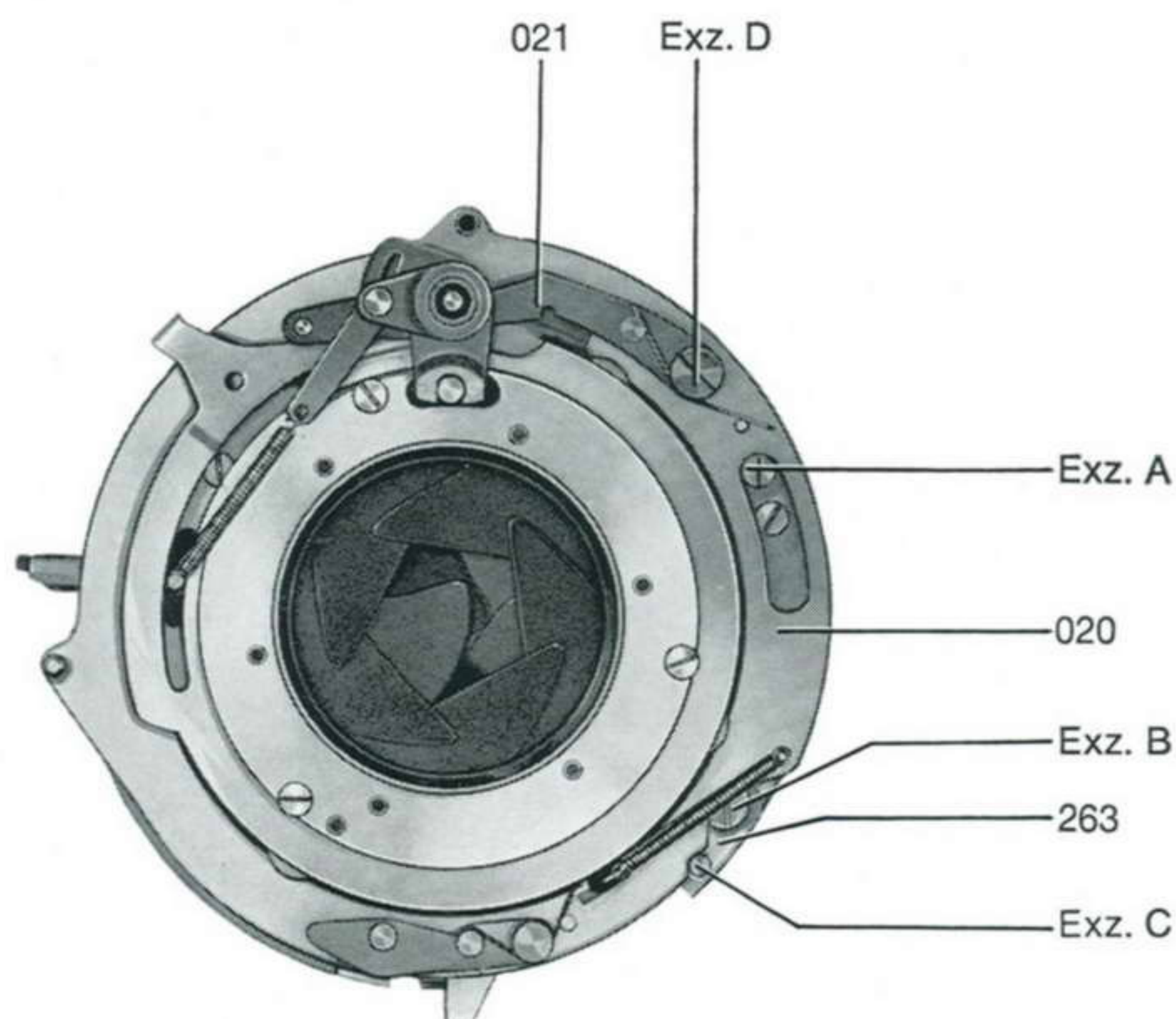
The cam ring 552 should swing out the escapement lever **341** far enough to allow the drive 514 to operate without any delay. To achieve this, bend the escapement lever accordingly.

1/125th second: Set this speed by bending the detent pin (Fig. 4).

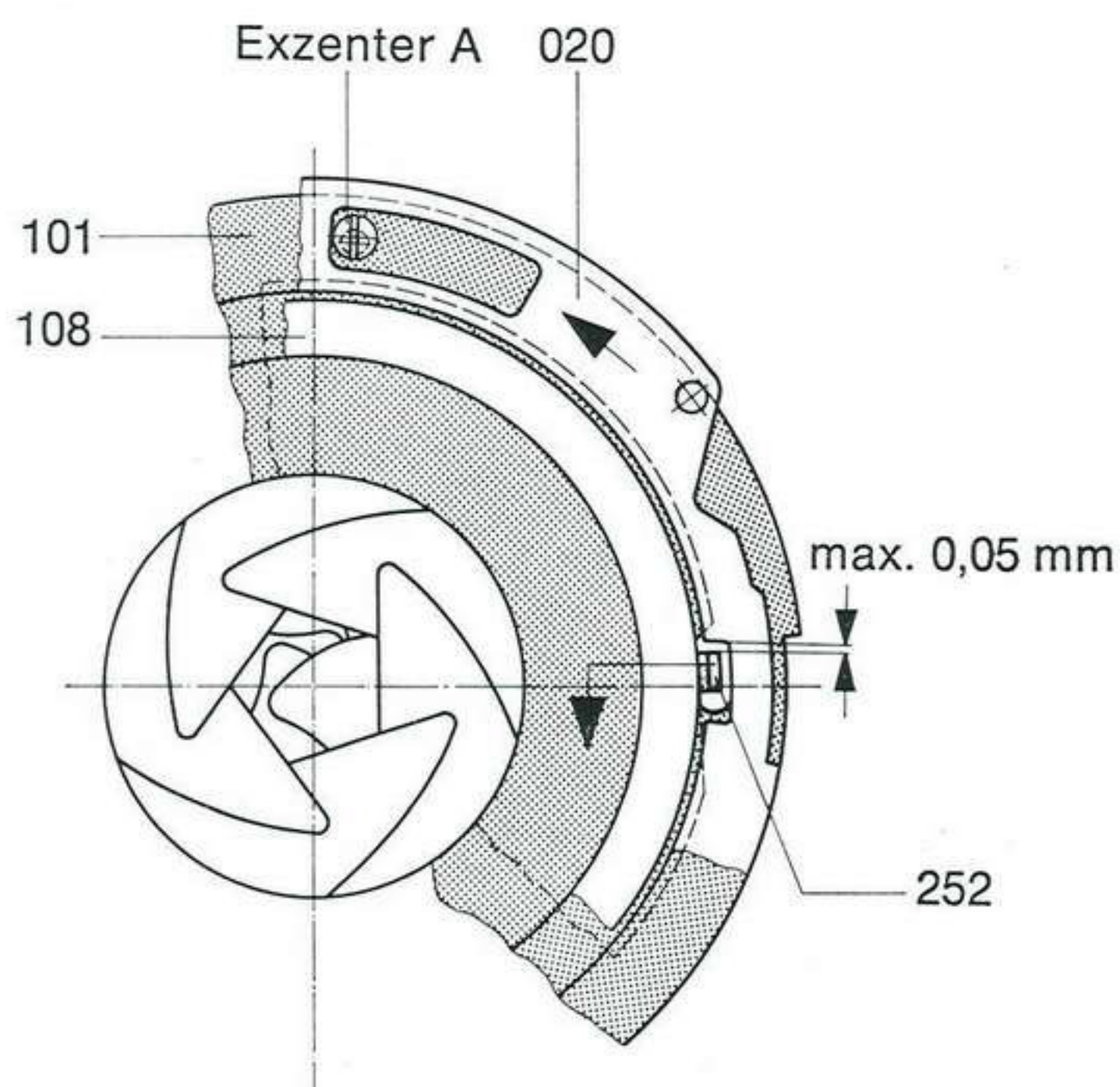
Shutter speeds	30	60	125	250	500
		$\pm 15\%$		$\pm 25\%$	

7. Adjusting the control cam

Check and, if necessary, perform the following adjustments if the control cam **020**, the blade opening ring **252** or the housing **101** was exchanged.



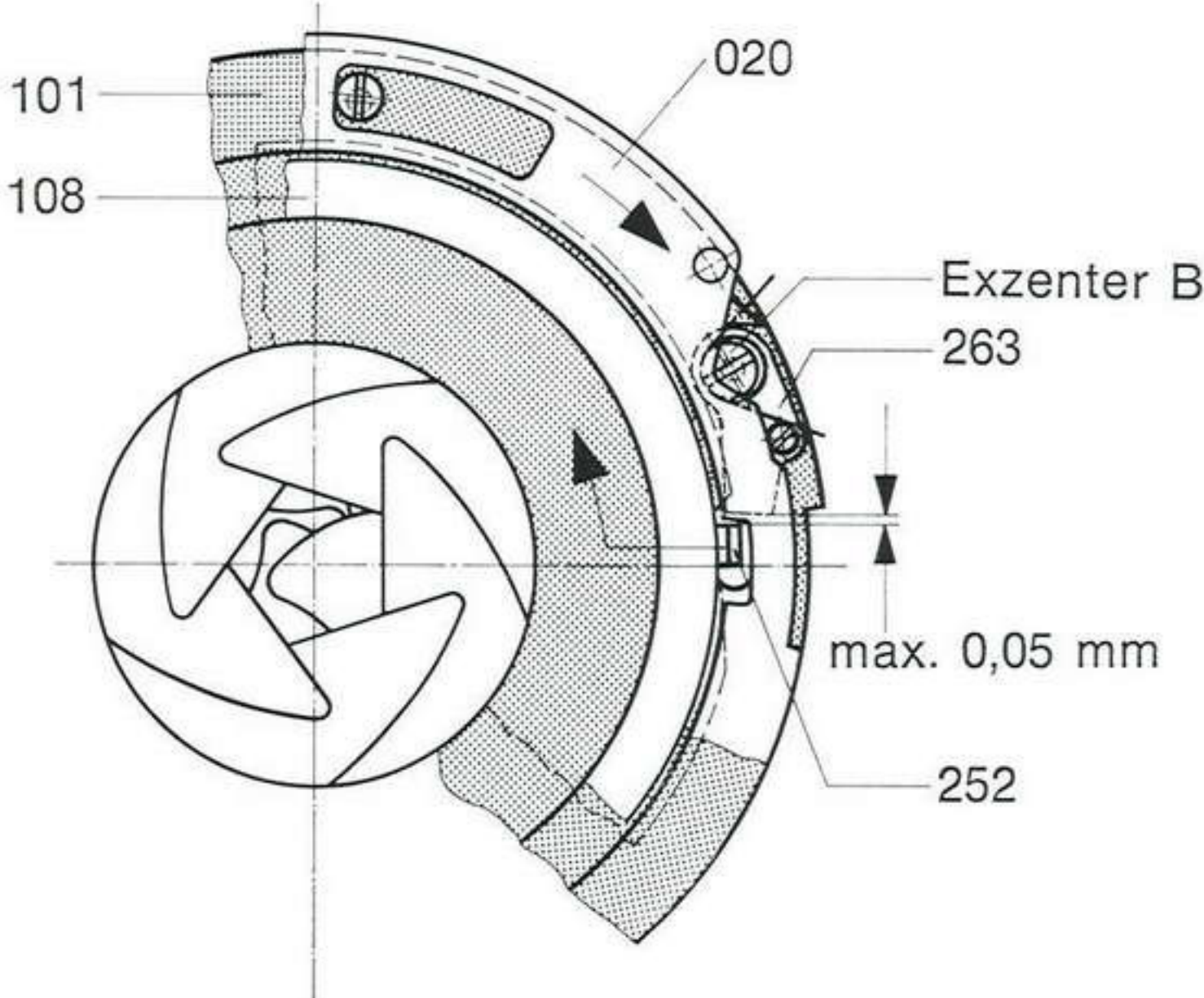
Adjustment of eccentrics:



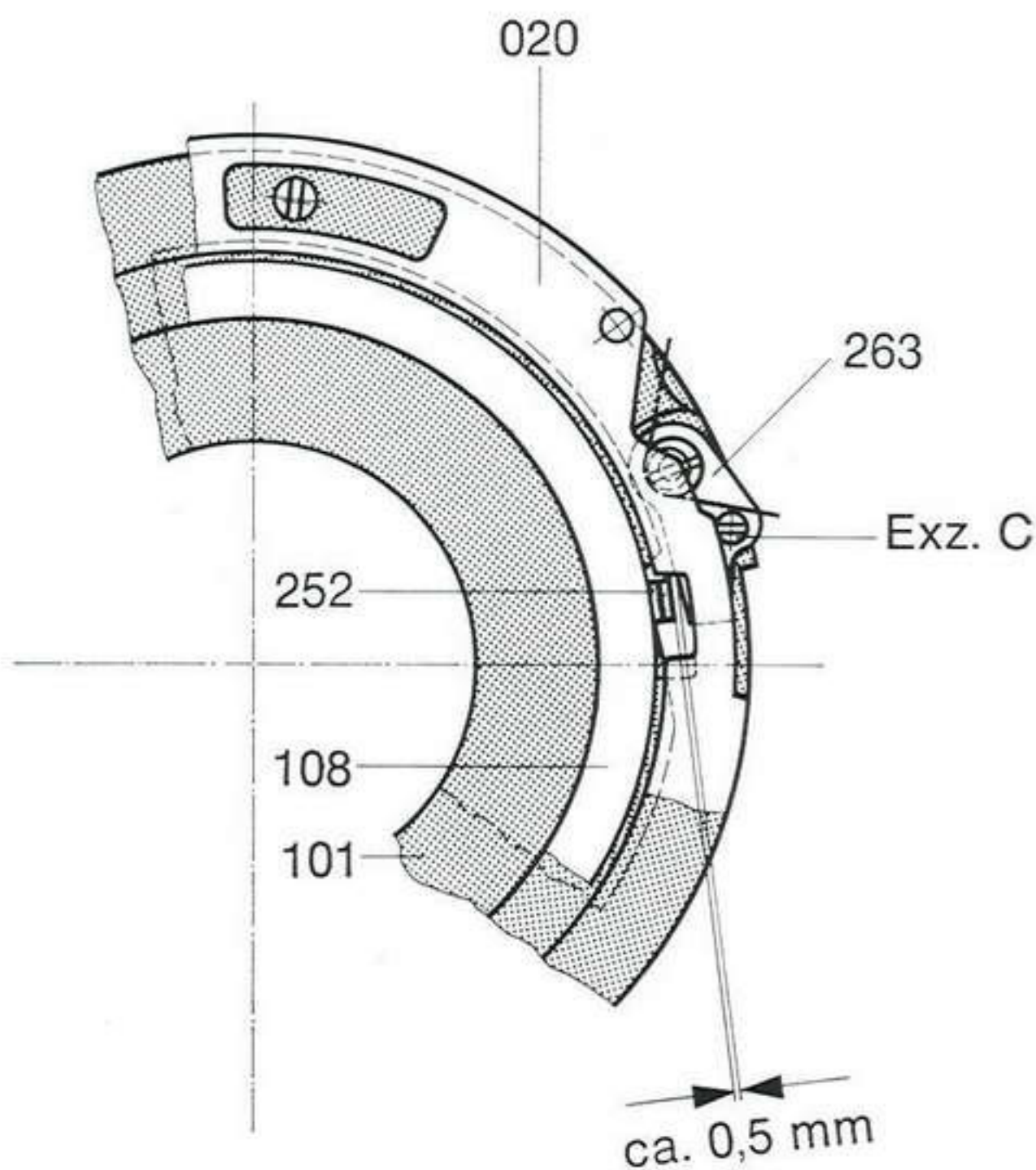
Adjust the blade opening ring 252 (lug) and the control cam 020 for a separation of max. 0.05 mm. During the adjustment keep the blade opening ring in the position corresponding to closed blades and the control cam in contact with the eccentric A.

SYNCHRO-COMPUR

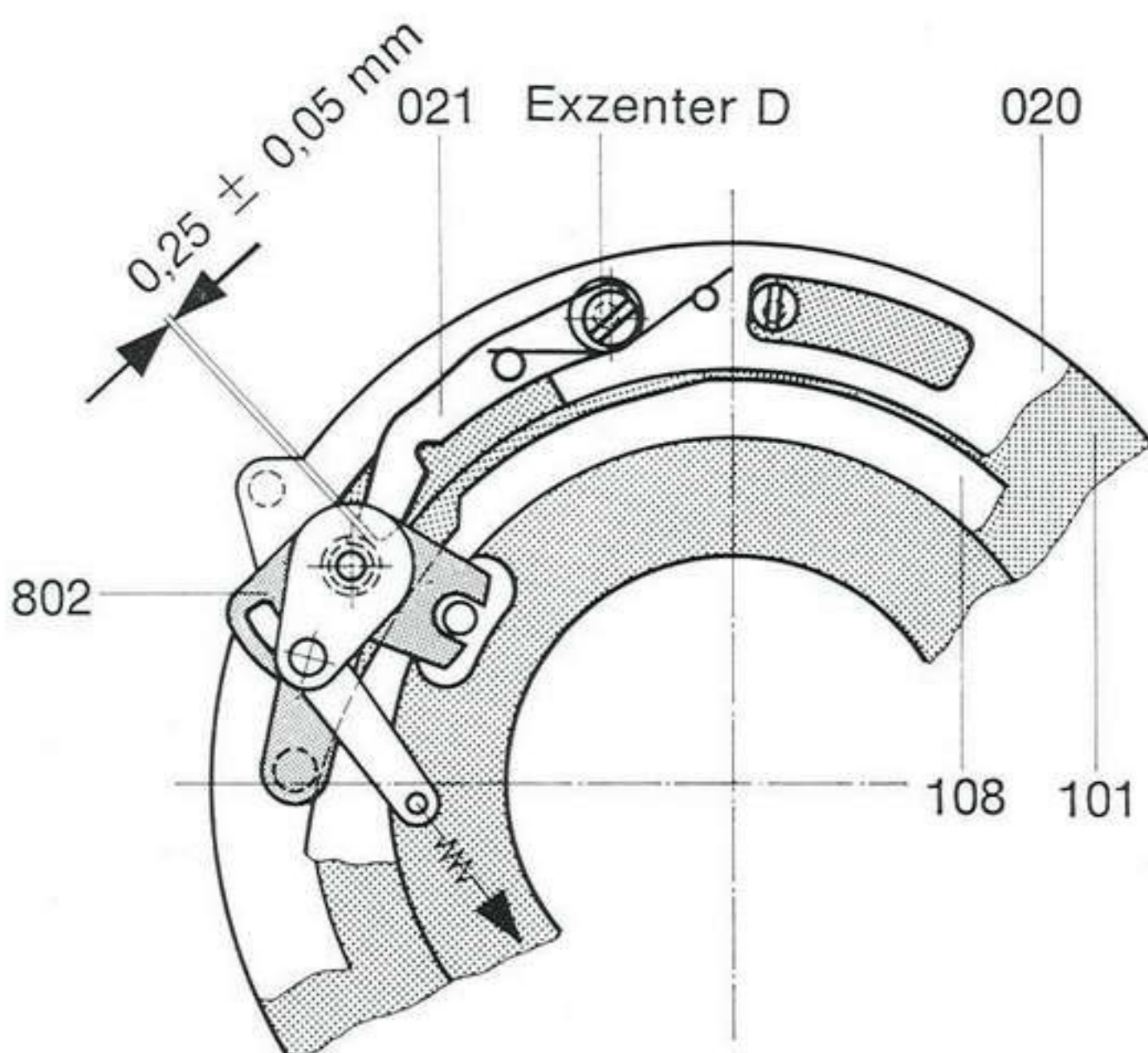
Instructions for repairs on special-purpose shutters



Adjust the blade opening ring 252 (lug) and the locking lever 263 for the blade opening ring for a max. separation of 0.05 mm. During the adjustment, keep the control cam 020 in contact with the eccentric A and the blade opening lug of the control cam in contact with the spring 264.



Adjust this so that operation of the control cam 020 causes the locking lever 263 to be swung out far enough for the blade opening ring 252 to move unhindered. Experience has shown that this is normally the case when the pawl has dropped about 0.5 mm (thickness of lug) into its counterpart.



Adjust the pawl 021 for the control cam 020 and the meshing face at the bushing of the opening lever 802 for a separation of 0.25 ± 0.05 mm. The control cam 020 should be in contact with the eccentric A.

8. The **spring 445—085** is on the one side hooked into the drive ring 086 and on the other into the pin of the control cam **020**.
9. **Intermediate diaphragm ring 037**. During insertion of the shutter (with the shift ring 148) into the shutter mount **745**, the driver **114** must be made to engage the lug of the diaphragm ring **108**.

Plate No.
3

	Plate No.
10. Aperture correction. If the aperture selector ring 590 is disconnected from the intermediate diaphragm ring 037 by loosening the three screws 592 , the aperture diameter must subsequently be readapted as follows:	2
1. Turn the aperture selector ring 590 so that it engages in the f/4 position (first click stop).	
2. Set the intermediate diaphragm ring 037 so that the interior edges of the diaphragm blades are just tangent to the test diameter. For the latter, the following values are applicable: Distagon 4/80: 22.90 mm. Sonnar 4/150: 24.00 mm.	
3. Retighten the screws 592.	
11. Mounting the sleeve 746	
1. Before attaching the sleeve 746 to the shutter, move the "set" indicator 032 , the tensioning segment 830 and the MX-selector 685 into the position shown in Fig. 1.	2
2. Shift ring 148 : The flat tang for the MX-selector 685 should be located in the center of the cutout in the shutter mount.	3
3. Hook the spring 829 into the screw 826 (shutter mount) and thread the two control leads the sleeve.	1 and 2
4. Place the sleeve loosely on the shutter. Insert the spring 595 and the ball (greased) for the MX-detent into 2 the shutter mount.	2
5. T e s t : With the sleeve in proper position, a) the MX-selector 685 must have engaged the shiftring lug 148 and stop in detent positions at either end. b) Tensioning of the shutter by means of the tensioning segment 830 must be possible. After tensioning, the tensioning segment must automatically return to its initial position. c) With the tensioning segment in tensioned position, the green dot of the "set" indicator 032 must be visible in the window of the sleeve.	2
12. The speed selector ring 539 is coupled with the cam ring 552 through the driver 575.	1
13. Flash terminal When soldering the flash leads, take care to ensure correct polarity.	1
14. Concentricity and planar trueness test It is advisable to remove the outer cover ring 738 for this purpose: Concentricity: Maximum eccentricity between mating surfaces of shutter mount 745 sleeve 746: 0.015 mm. Planar trueness: Maximum wobble between lens seating face of shutter mount 745 and lens seating face of sleeve 746: 0.015 mm.	1

Compur Shutter Repair Manual

Section 8

Tables for quick-change mounts

Übersichtstabelle Objektiv/Wechselfassung
für Wechselfassungen mit Blendenskala
Table Lens/Quick-Change Mount
for Quick-Change Mount with diaphragm-scale

**Wechselfassungen
Quick-Change Mount
Blatt 1**

Objektiv Lens	Objektiv-Hersteller Lens Manufacturer	Wechselfassung Quick-Change Mount	Form* Form*	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Plastigon 1:2,8/50	Enna-Werk, München	CN—1111—849	A/1	CN—1111—800	1—2	CN—1111—800
Eurygon 1:4,0/35	Rodenstock, München	CN—1111—805	A/1	CN—1111—800	1—2	CN—1111—800
Rotelar 1:4,0/85		CN—1111—811	A/2	CN—1111—800	1—2	CN—1111—800
Rotelar 1:4,0/135		CN—1111—807	B	CN—1111—800	1—2	CN—1111—800
Ysarex 1:2,8/50		CN—1111—815	A/1	CN—1111—800	1—2	CN—1111—800
Radiogon 1:4,0/35	Schneider, Kreuznach	CN—1111—839	A/1	CN—1111—800	1—2	CN—1111—800
Tele-Arton 1:4,0/85		CN—1111—811	A/2	CN—1111—800	1—2	CN—1111—800
Xenar 1:2,8/50		CN—1111—817	A/1	CN—1111—800	1—2	CN—1111—800
Cassarit 1:2,8/50	Steinheil, München	CN—1111—823	A/1	CN—1111—800	1—2	CN—1111—800
Culminar 1:2,8/50		CN—1111—837	A/1	CN—1111—800	1—2	CN—1111—800
Culmigon 1:4,5/35		CN—1111—821	A/1	CN—1111—800	1—2	CN—1111—800
Color Skopar 1:2,8/50	Voigtländer, Braunschweig	CN—1111—809	A/1	CN—1111—800	1—2	CN—1111—800
Skoparet 1:3,4/35		CN—1111—813	A/1	CN—1111—800	1—2	CN—1111—800

* Form nach COMPUR-Typenübersicht „Wechselfassungen“, Blatt 3.
Form as per COMPUR Specifications for “Quick-Change Lens Mounts“, Sheet 3.

COMPUR-WERK MÜNCHEN

Übersichtstabelle Objektiv/Wechselfassung
für Wechselfassungen ohne Blendenskala
Table Lens/Quick-Change Mount
for Quick-Change without diaphragm-scale

Wechselfassungen
Quick-Change Mount
Blatt 2
Page 2

Objektiv-Hersteller	Objektiv	Wechselfassung Quick-Change-Mount		Form* Form*	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
Lens Manufacturer	Lens	mit Schärfentiefen with dept of field -					
		- skala	- anzeiger - indicator (autom.)				
Rodenstock, München	Eurygon 1:2,8/30	—	CN—1111—872	B/1	CN—1111—851	3—4	CN—1111—851
	Eurygon 1:4,0/35	—	CN—1111—859	A/1	CN—1111—851	3—4	CN—1111—851
	Heligon 1:1,9/50	—	CN—1111—869	C/1	CN—1111—863	3—4	CN—1111—863
	Rotelar 1:4,0/85	—	CN—1111—868	A/2	CN—1111—851	3—4	CN—1111—851
	Rotelar 1:4,0/135	—	CN—1111—853	B/1	CN—1111—851	3—4	CN—1111—851
	Rotelar 1:4,0/135	—	CN—1111—857	C/1	CN—1111—863	3—4	CN—1111—863
	Ysarex 1:2,8/50	—	CN—1111—858	A/1	CN—1111—851	3—4	CN—1111—851
Schneider, Kreuznach	Curtagon 1:4,0/28	CN—1111—887	CN—1111—856	B/1	CN—1111—851	3—4	CN—1111—851
	Curtagon 1:2,8/35	CN—1111—888	CN—1111—857	A/1	CN—1111—851	3—4	CN—1111—851
	Xenar 1:2,8/45	CS—1111—376	—	D	CS—1111—376	3—4	CN—1111—851
	Xenar 1:2,8/50	—	CN—1111—883	A/1	CN—1111—851	3—4	CN—1111—851
	Xenon 1:1,9/50	CN—1111—889	CN—1111—884	C/1	CN—1111—863	3—4	CN—1111—863
	Tele-Arton 1:4,0/85	—	CN—1111—852	A/2	CN—1111—851	3—4	CN—1111—851
	Tele-Arton 1:4,0/90	CN—1111—890	—	A/2	CN—1111—851	3—4	CN—1111—851
	Tele-Xenar 1:4,0/135	CN—1111—891	CN—1111—860	B/1	CN—1111—851	3—4	CN—1111—851
	Tele-Xenar 1:4,8/200	CN—1111—892	CN—1111—879	C/2	CN—1111—863	3—4	CN—1111—863

- siehe „Anmerkungen“ ◦ see „supplements“

* Form und Verwendungsart nach COMPUR-Typenübersicht „Wechselfassungen“, Blatt 5 und Anmerkung (34)
Form and application as per COMPUR-Specification for „Quick-Change Lens Mounts“, Sheet 5 and Note (34)

Fortsetzung siehe Rückseite dieses Blattes
Continued on the other page

COMPUR-WERK MÜNCHEN

Objektiv-Hersteller Lens Manufacturer	Objektiv Lens	Wechselfassung Quick-Change-Mount		Form* Form*	Bildtafel Illustration Plate	Rep.-Anl. Seite Rep. Instr. Page	Schmierplan Lubrication Schedule
		mit Schärfentiefen with depth of field -					
		- skala	- anzeiger - indicator (autom.)				
Enna-Werk, München	Ennalyt 1:1,9/50	—	CN—1111—862	C/1	CN—1111—863	3—4	CN—1111—863
	Lithagon 1:3,5/35	—	CN—1111—865	A/1	CN—1111—851	3—4	CN—1111—851
	Ultralit 1:2,8/50	—	CN—1111—861	A/1	CN—1111—851	3—4	CN—1111—851
Steinheil, München	Culmigon 1:4,5/35	—	CN—1111—866	A/1	CN—1111—851	3—4	CN—1111—851
	Quinon 1:1,9/50	—	CN—1111—863	C/1	CN—1111—863	3—4	CN—1111—863
Voigtländer, Braunschweig	Color Skopar 1:2,8/50	—	CN—1111—854	A Spez.	CN—1111—851	3—4	CN—1111—851
	Septon 1:2,0/50	—	CN—1111—877	C/1	CN—1111—863	3—4	CN—1111—863
	Skoparex 1:3,4/35	—	CN—1111—855	A Spez.	CN—1111—851	3—4	CN—1111—851
	Super-Dynarex 1:4,0/135	—	**))	A Spez.	—	—	—
	Dynarex 1:4,8/100	—	**))	A Spez.	—	—	—
	Dynarex 1:3,4/90	—	CN—1111—878	C/1 Spez.	CN—1111—868	3—4	CN—1111—863
	Skopagon 1:2,0/40	—	**))	C/1 Spez.	—	—	—
	Super-Dynarex 1:4,0/200	—	**))	C/2 Spez.	—	—	—
	Super-Dynarex 1:5,6/350	—	**))	C/2 Spez.	—	—	—
	Color-Lanthar 1:2,8/50	CN—1111—886	—	D/1 Spez.	CN—1111—885	5	—

* Form und Verwendungsart nach COMPUR-Typenübersicht „Wechselfassungen“, Blatt 5 und Anmerkung
Form and application as per COMPUR-Specification for „Quick-Change Lens Mounts“, Sheet 5 and Note

** Ersatzteile sind über die Firma Voigtländer, Braunschweig, erhältlich.
Spare Parts are obtainable from the Voigtländer company.

Compur Shutter Repair Manual

Section 9

Illustrations for quick-change mounts

COMPUR-WECHSELFASSUNG, Größe 00

für Weitverschlüsse der Type CN-1110-030 ohne Lichtwertnachführung

COMPUR QUICK-CHANGE MOUNT 00

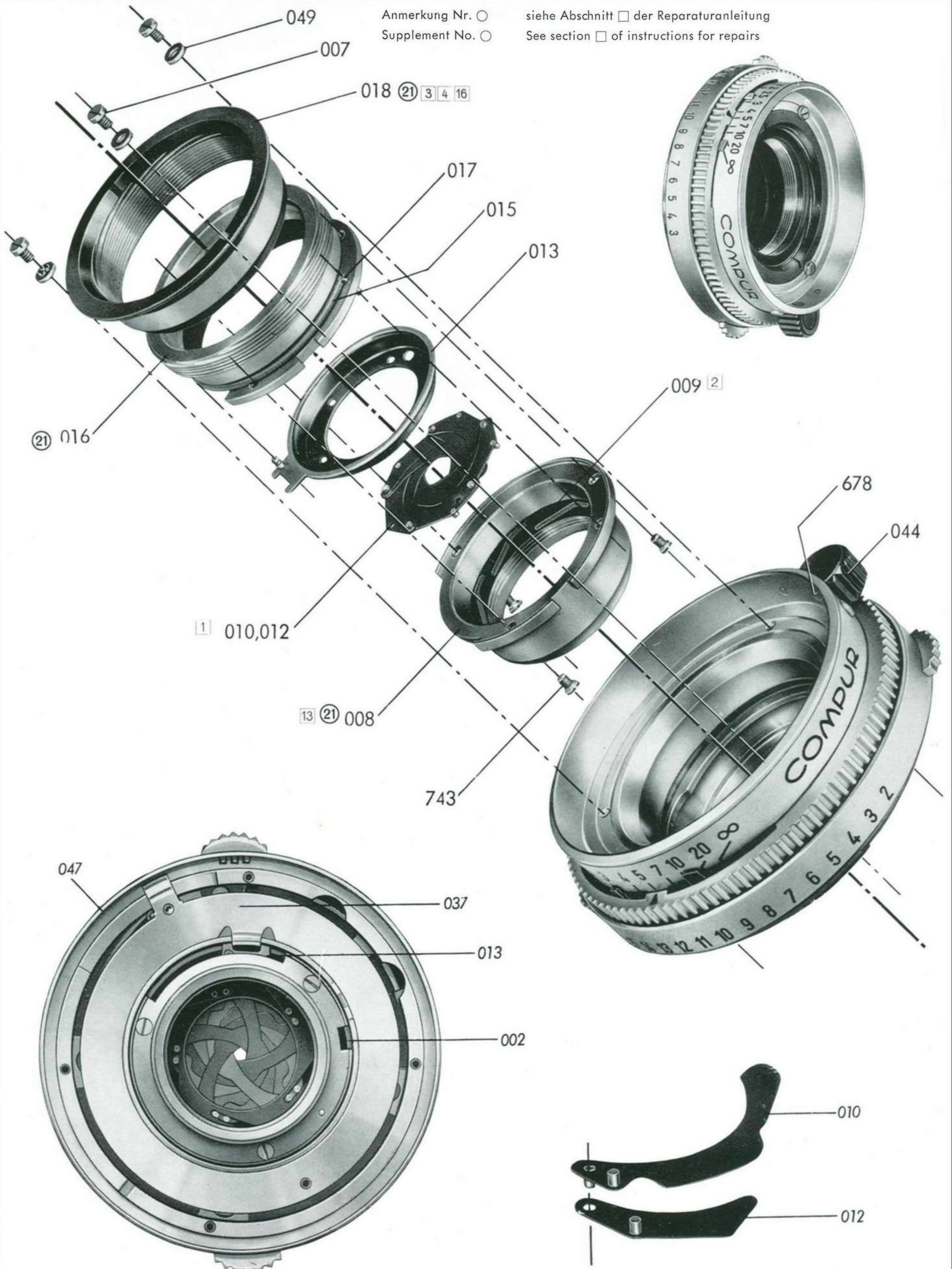
for Wide Shutters of type CN-1110-030 without light value follow-up system

CN-1111-800

Tafel 1
Plate 1

Anmerkung Nr. ○
Supplement No. ○

siehe Abschnitt □ der Reparaturanleitung
See section □ of instructions for repairs



COMPUR-WERK MÜNCHEN

COMPUR-WECHSELFASSUNG, Größe 00

für Weitverschlüsse der Type CN-1110-030 ohne Lichtwertnachführung

COMPUTER QUICK-CHANGE MOUNT 00

for Wide Shutters of type CN-1110-030 without light value follow-up system

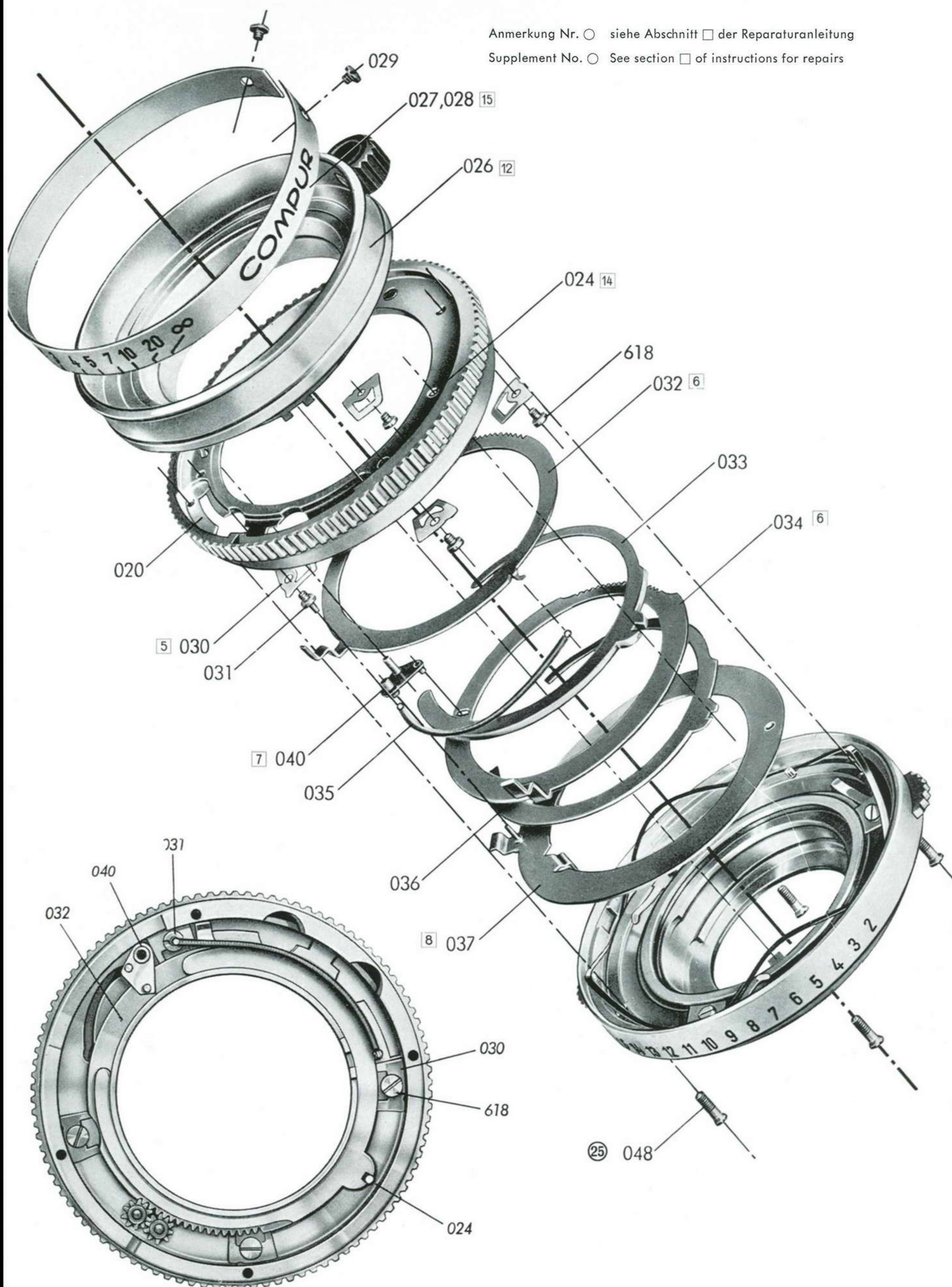
CN-1111-800

Tafel 2

Plate 2

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung

Supplement No. ☐ See section ☐ of instructions for repairs

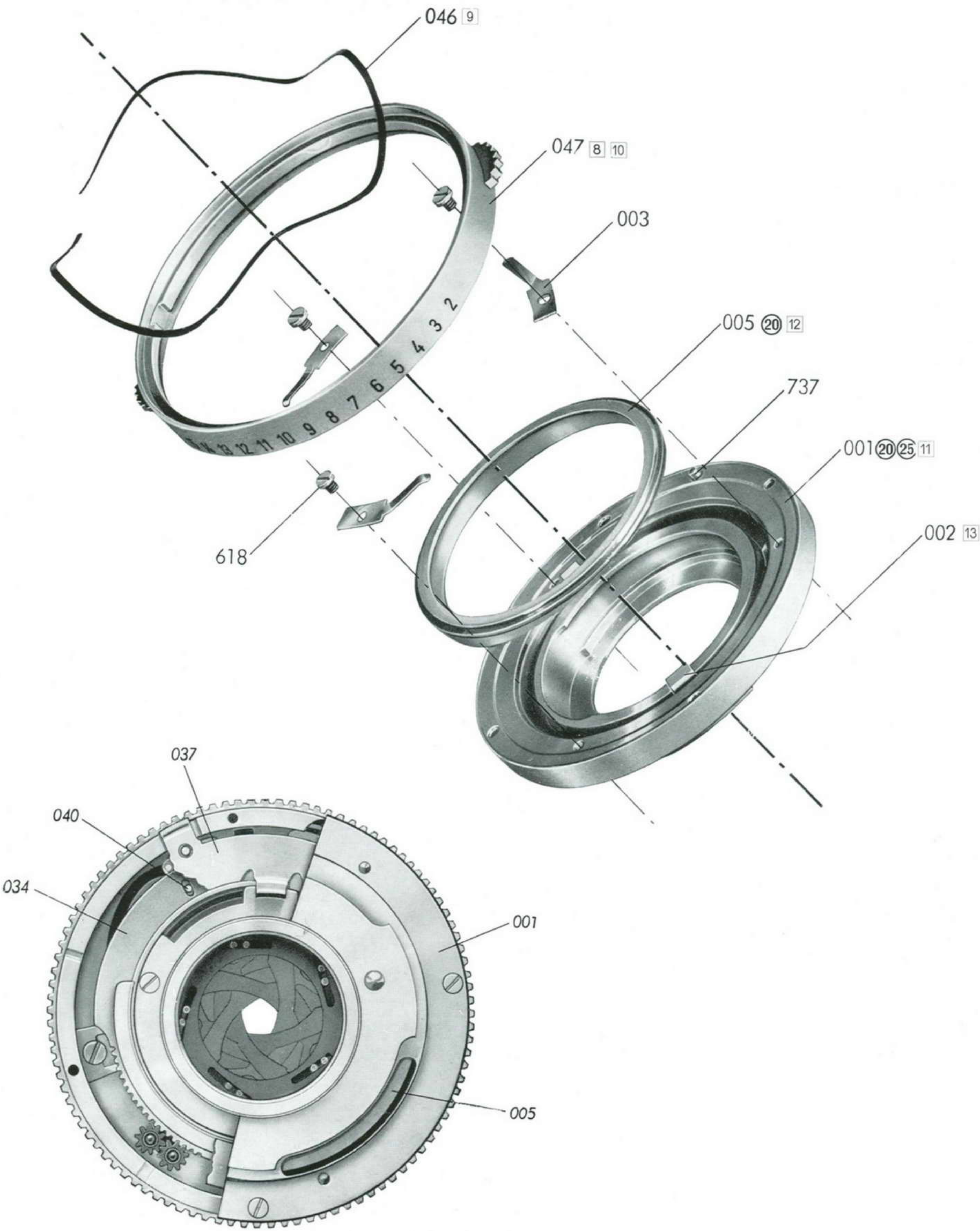


COMPUR-WERK MÜNCHEN

COMPUR-WECHSELFASSUNG, Größe 00
für Weitverschlüsse der Type CN-1110-030 ohne Lichtwertnachführung
COMPUR QUICK-CHANGE MOUNT 00
for Wide Shutters of type CN-1110-030 without light value follow-up system

CN-1111-800
Tafel 3
Plate 3

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



COMPUR-WECHSELFASSUNG, Größe 00

mit automatischer Schärfentiefeanzeige für Weit- und Weit-Reflex-Verschuß mit Lichtwertnachführung

COMPUR QUICK-CHANGE MOUNT, Size 00

with automatic depth-of-field indicator for Wide and Wide Reflex Shutters with light value follow-up-system

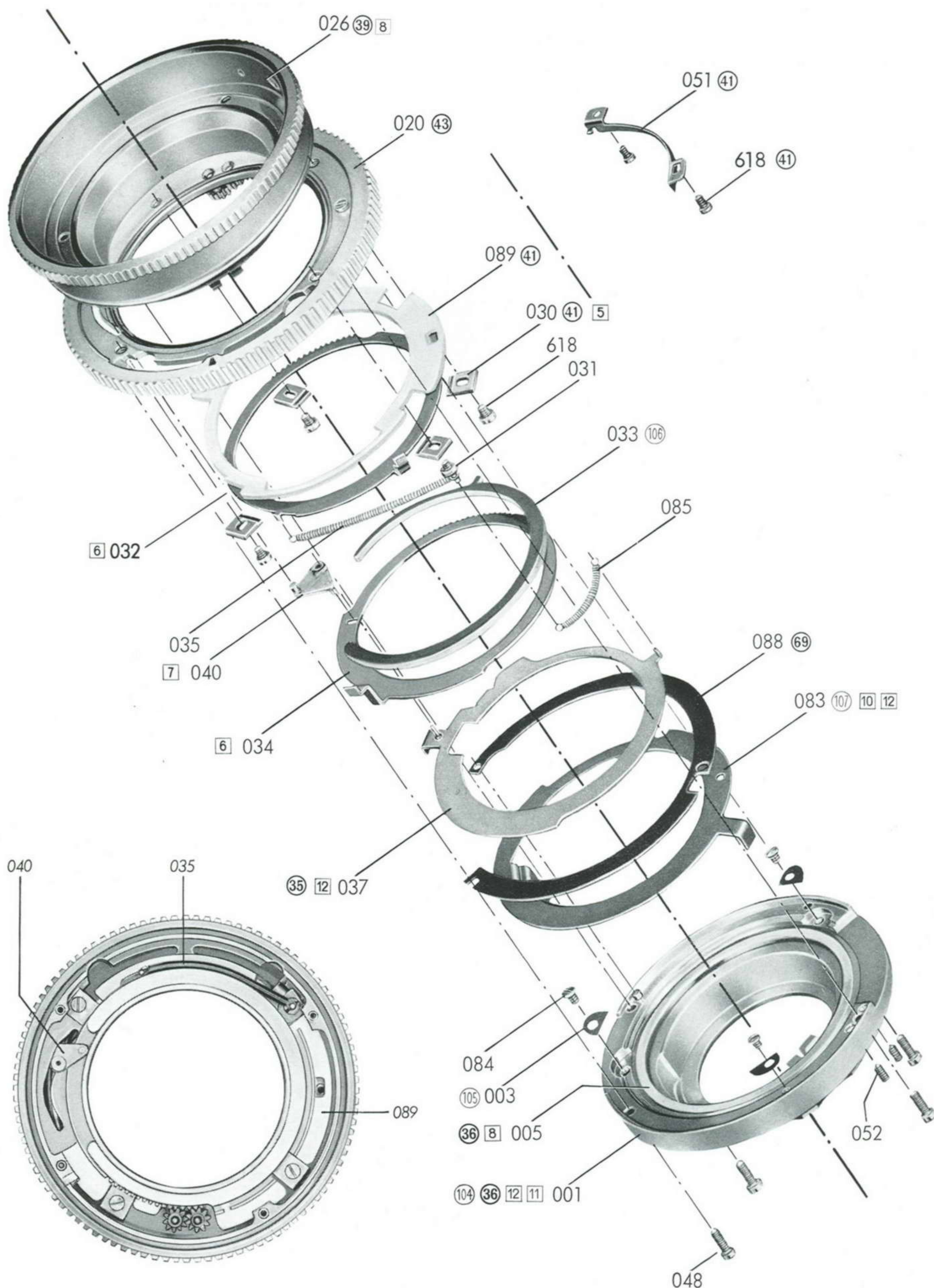
CN-1111-851**Tafel 2****Plate 2**

Anmerkung Nr. ○

Siehe Abschnitt □ der Reparaturanleitung

Supplement No. ○

See section □ of instructions for repairs

**COMPUR-WERK MÜNCHEN**

COMPUR-WECHSELFASSUNG, Größe 00

mit automatischer Schärfentiefeanzeige für Weit- und Weit-Reflex-Verschuß mit Lichtwertnachführung

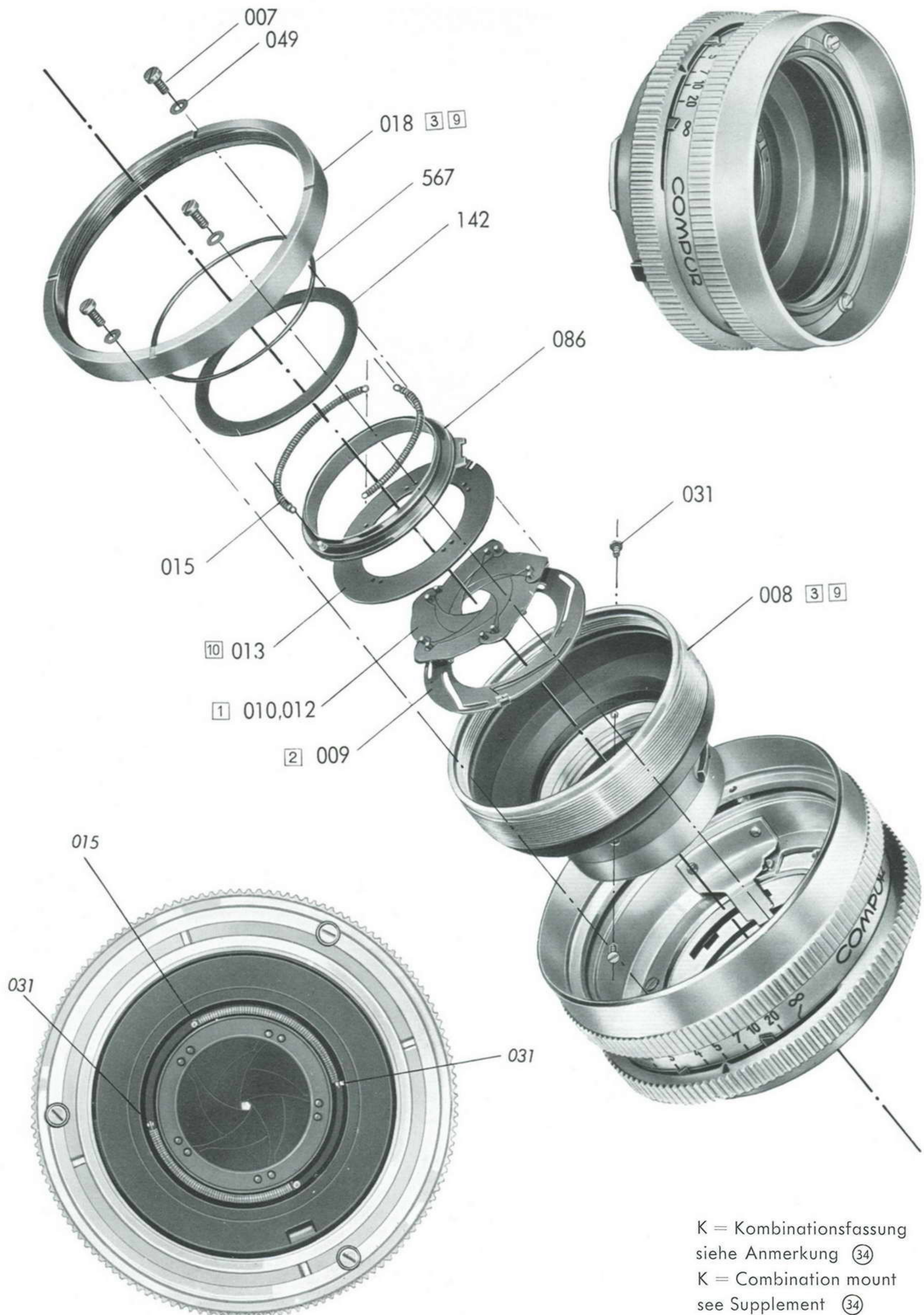
QUICK-CHANGE MOUNT, Size 00

with automatic depth-of-field indicator for Wide and Wide Reflex Shutters with light value follow-up-system

CN-1111-863**Tafel/Plate 1**Formen C/1-K, C/2-K
Forms

Siehe Abschnitt □ der Reparaturanleitung

See section □ of instructions for repairs

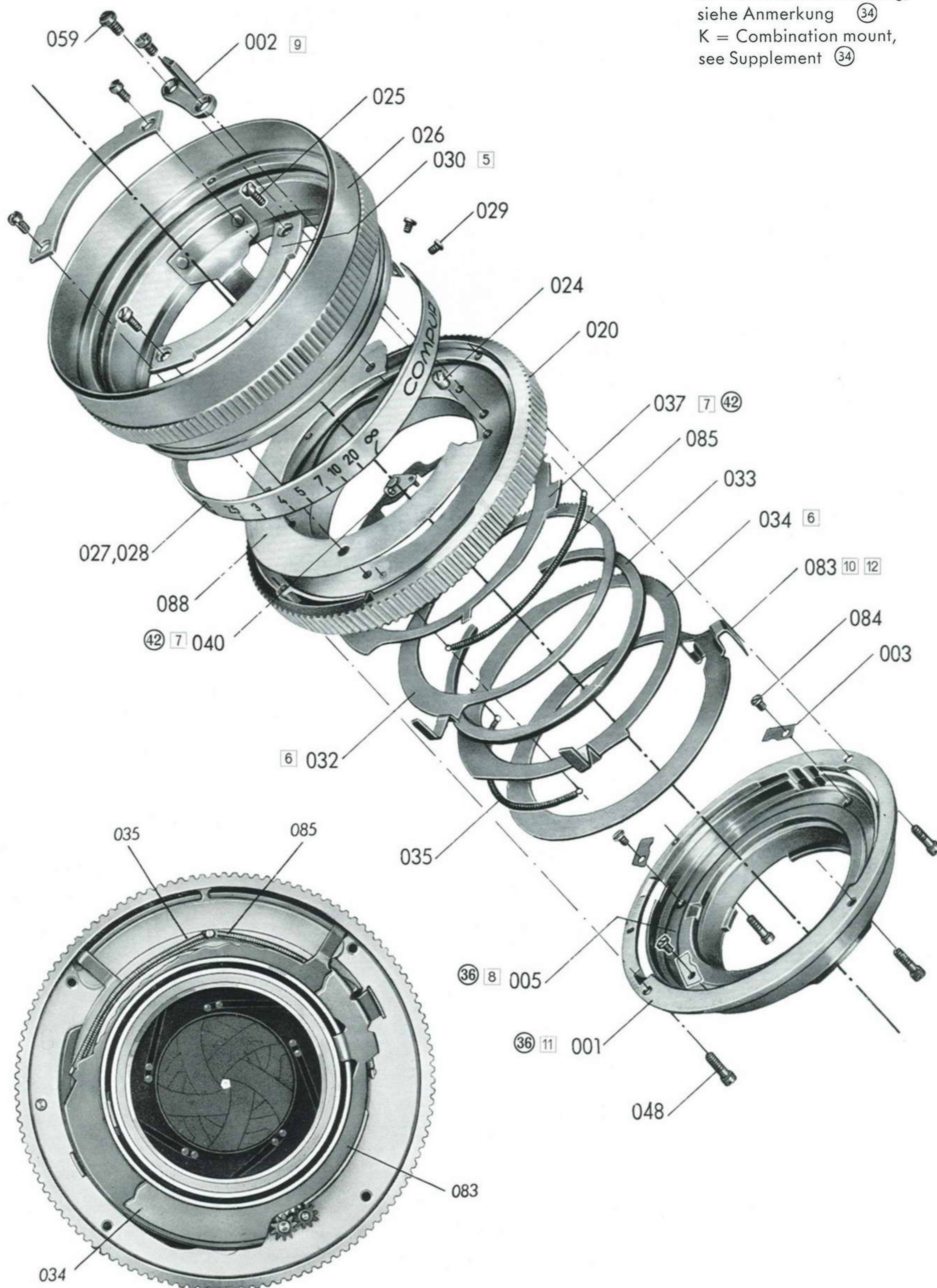
K = Kombinationsfassung
siehe Anmerkung ③④K = Combination mount
see Supplement ③④**COMPUR-WERK MÜNCHEN**

COMPUR-WECHSELFASSUNG, Größe 00

mit automatischer Schärfentiefeanzeige für Weit- und Weit-Reflex-Verschluß mit Lichtwertnachführung

COMPUR QUICK-CHANGE MOUNT, Size 00

with automatic depth-of-field indicator for Wide and Wide-Reflex Shutters with light value follow-up system

CN-1111-863**Tafel/Plate 2**Formen C/1-K, C/2-K
FormsAnmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairsK = Kombinationsfassung,
siehe Anmerkung ③④
K = Combination mount,
see Supplement ③④**COMPUR-WERK MÜNCHEN**

COMPUR-WECHSELFASSUNG, Größe 00

für Weit- und Weit-Reflex-Verschluß mit Lichtwertnachführung

COMPUR-QUICK-CHANGE MOUNT

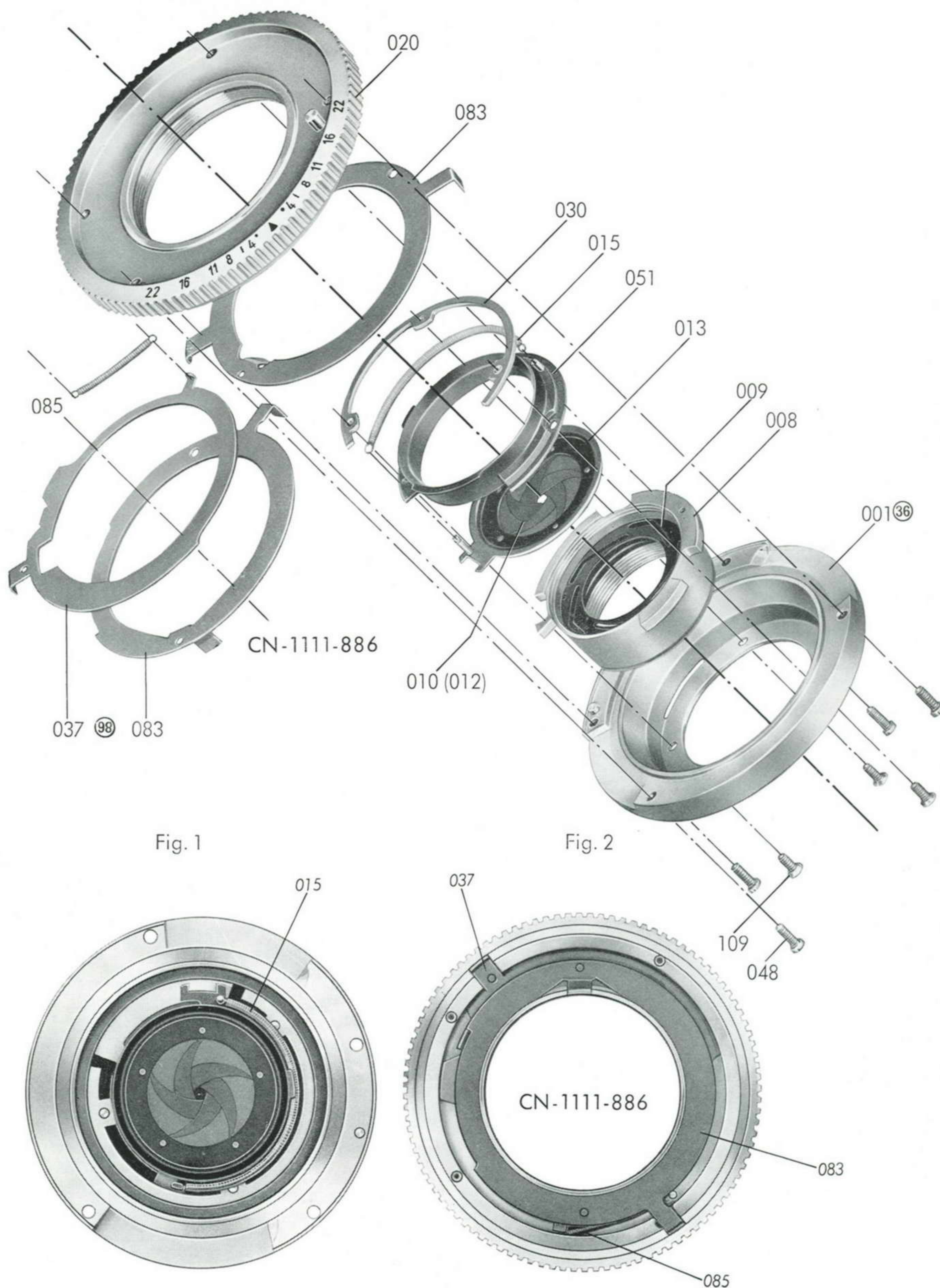
"Wide" and "Wide Reflex" Shutter for follow-up system

CN-1111-885

CN-1111-886

Tafel 1
Plate 1

Plate 1

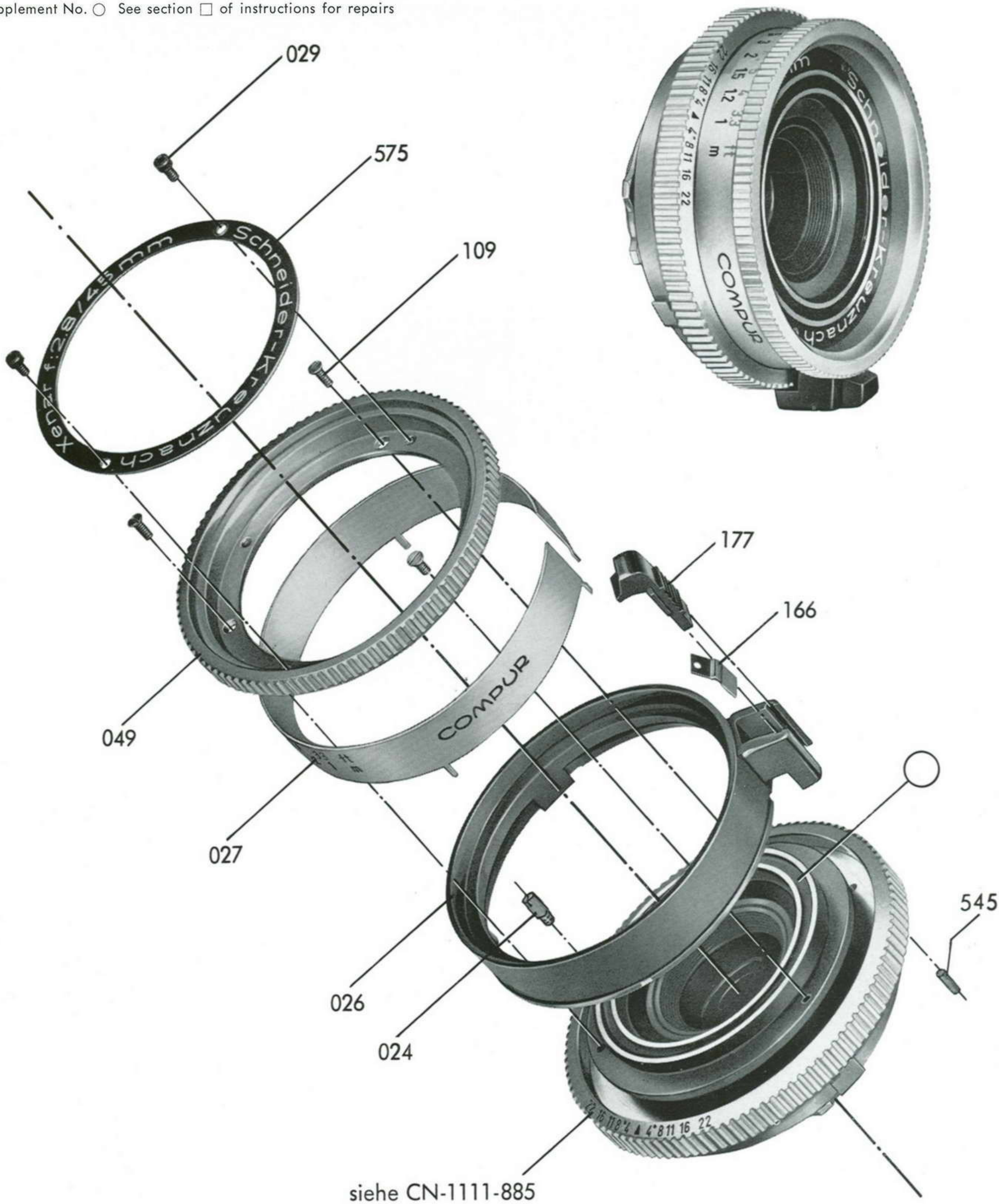


COMPUR-WERK MÜNCHEN

COMPUR - WECHSELFASSUNG
für Fa. Kodak AG, Stuttgart
COMPUR - Quick-Change Mount
for Messrs. Kodak AG, Stuttgart

CS-1111-376
Tafel 1
Plate 1

Anmerkung Nr. ○ siehe Abschnitt □ der Reparaturanleitung
Supplement No. ○ See section □ of instructions for repairs



Compur Shutter Repair Manual

Section 10

Repair instructions for quick-change mounts

QUICK-CHANGE MOUNT

Repair Instructions

Page 1

COMPUR QUICK-CHANGE MOUNT CN-1111-800

for Synchro-Compur 00-MXV Wide Shutter without Light Value Follow-up System

Cleaning the quick-change mount

To clean the quick-change mount, only clean, grease-free trichloroethylene or tetrachloroethylene should be used.

The lacquered depth of field indicators, knob 040 for the rangefinder control ring and the mounted diaphragm should only be cleaned with suitable dry material. If it is essential to wet-clean the diaphragm, it should be previously disassembled.

The cleaned parts should be thoroughly dried before reassembly and regreased as per lubricating instructions.

Lubricating instructions

The necessary lubricants A, B, C (see lubrication schedule) are obtainable from us. No other lubricants are permissible, since only those tested by us will ensure proper functioning.

Lubrication schedule CN-1111-800 indicates the lubricant and the points to be served. Be sure to stir lubricant A briskly before use.

Assembly and adjustments

Before disassembly, it is advisable to set the range setting ring 026 to ∞ and mark its position relative to helical focusing nut 018 and front mount 016 in order to facilitate focusing (see point 16).

	CN-1111-800 Plate
1. Diaphragm segment 010, cover segment 012 and their bearings should be kept completely grease-free.	1
2. Diaphragm cover 009 should be fitted into the cam slots of the rear mount 008.	1
3. Assembled mount (Parts 008 to 018): check concentricity and planar trueness. Concentricity: maximum eccentricity between front mount 016 and rear mount 008: 0.015 mm. Planar trueness: maximum wobble between face of front mount and face of rear mount: 0.015 mm. (Gauge LZ 17 1110 806 008).	1
4. Helical focusing movement must be smooth and uniform over the entire travel range.	
5a. Retaining springs 806, 030 should be so positioned that they engage in the recess of the range setting ring 026 and firmly hold it against the mount body 020. When screwing into place, the retaining springs should be pressed against the rim of the mount body.	2

CN-1111-800
Plate

- 5b. **Retaining plates 807—030** should be pushed against range setting ring 026 while being screwed on, so that all springs are evenly stressed, permitting smooth but play-free rotation of the range setting ring. not Illustrated
6. **Indicator rings 032 and 034** should be positioned symmetrically to the range indicator mark. 2
7. **The rocker 040** is seated on the pivot of the intermediate diaphragm ring 037 with the long pin in the guide groove of the mount 020. The small pin of the rocker engages in the slot of the indicator ring 034. 2
8. **Intermediate diaphragm ring 037** and **diaphragm ring 047** are fixed relative to each other by groove and lug. 2 & 3
9. **Undulated spring 046** should be so positioned that both ends of the loaded spring point towards the mount body. 3
10. **Diaphragm coupling ring 047** should readily disengage at any setting and retain springiness; the coupling ring should not disengage from the intermediate diaphragm ring 037. 3
11. **Bayonet ring 001.** Securely fasten screws 048. 3
12. **Rangefinder control ring 005** and **range setting ring 026** are fixed relative to each other by groove and lug. 3
13. **Mount** (Parts 008 to 018) should be inserted with half-open diaphragm (keep open with a wooden peg of about 5.00 mm diam.) into the assembled mount body 020 so that the two grooves of the mount and diaphragm ring 013 lie in the slip guide way 002.
Care should be taken not to damage sliding surfaces and diaphragm ring lugs 013. 1
14. **Range setting stop 024** is eccentric and serves to set the gap of 1.2 (± 0.02 mm) between bayonet ring seating 001 and the indicator mark of the rangefinder control cam at the limit stop of the rangefinder control ring 005. 2
15. **Range scale 027, 028** is aligned and screwed tight only after checking point 13 above at the ∞ infinity setting. 1
16. **Focusing** should be undertaken, after slackening screws 007, by adjusting the helical focusing screw 018. 1
17. **Assembled quick-change mount** should be checked for planar trueness. Between the lens seating of bayonet ring 001 (reference surface) and face of the rear mount 008, play must not exceed 0.03 mm. (Gauge LZ 2 1110 806 000.) 1

COMPUR QUICK-CHANGE MOUNTS CN-1111-850
with Automatic Depth of Field Indication
for Synchro-Compur 00-MXV Wide and Wide-Reflex-Shutters
with Light Value Follow-up System

Cleaning

Quick-change mounts should be cleaned only with fresh, grease-free trichloroethylene or tetrachloroethylene.
Lacquered depth-of-field indicators, parts coated with grey or green anti-friction lacquer, plastics knobs, parts with filled engravings and the assembled diaphragm should be cleaned only with dry materials, taking care not to damage the anti-friction lacquer finish.
The cleaned parts should be well dried and regreased as per lubricating instructions before re-assembly of the quick-change mount.

Lubricating Instructions as for Compur Quick-Change Mount CN-1111-800
See also Lubrication Schedule CN-1111-850
(models A/1-K, A/2-K, B/1-K and C/1-K)

Assembly and Adjustments

In order to facilitate subsequent focusing (see focusing, page 2) the positions of the Rangefinder Setting Ring 026 (set at infinity) Helical Focusing Nut 018 and Mount 016 should be marked.

Diaphragm Segments 010, Cover Plates 012 and their bearing points should be kept completely grease-free.

Diaphragm Cover 009 should be fitted in the cam slots of the Rear Mount 008.

Assembled Mount (Parts 008 to 018): check concentricity and planar trueness.

Concentricity: Maximum eccentricity between front mount 016 and rear mount 008: 0.015 mm.

Planar Trueness: Maximum wobble between face of front mount (lens seating) and face of rear mount (lens seating): 0.015 mm.

(Gauge LZ 17 1111 806 008).

In model C/1 concentricity and planar trueness are ensured by design features.

Helical Focusing Movement must be smooth and uniform over the entire travel range.

Type No.	Illustration Plate No.	Spare Parts Lists see "Illustration Plate" Column
	CN-1111-800	CN-1111-800
	CN-1111-850 (A, B)	still CN-1111-851
	CN-1111-850 (C)	still CN-1111-863
	Plate	

2 2
1 1

1 1

1 1

1 1 1

1

Retaining Plates 030 should be pushed against Range Setting Ring 026 while being screwed on, so that all feathers are evenly stressed, and the range setting ring can be moved rotated smoothly but without play.

CN-1111-800
CN-1111-850
CN-1111-850
Plate
2

In type B/1, before assembling Mount 020 and Range Setting 026, first Indicator Ring 032 should be positioned and then the range setting ring fastened with Retaining Plates 030.

1

Indicator Rings 032 and **034** should be positioned symmetrically to the range indicator mark.

2

2

The Rocker 040 is seated on the pivot of the Diaphragm Intermediate Ring 037 with the long pin in the guide groove of the Mount 020. The small pin of the rocker engages in the slot of the Indicator Ring 034.

2

2

In type C/1, the rocker is fastened to the intermediate ring.

Rangefinder Control Ring 005 and **Range Setting Ring 026** are fixed relative to each other by groove and lug.

1 2

Mount (Parts 008 to 018) should be inserted with half-open diaphragm (keep open with a wooden peg of about 5.00 mm diam) into the assembled Mount Body 020 so that the corresponding grooves of the mount and Diaphragm Ring 013 lie in the Slip Guide Way 002 (see Plate 1, lower illustration, CN-1111-800). Care should be taken not to damage sliding surfaces and Diaphragm Ring Lugs 013.

1

1

Preset Diaphragm Ring 083 and **Diaphragm Ring 013** are fixed relative to each other by groove and lug.

1 2

Bayonet Ring 001 should first be slackly screwed to Mount Body 020 with Screws 048, after which both parts should be adjusted relative to each other so that the rear mount is free and can be moved without rubbing against the bayonet ring.

1 2

Screws 048 are then firmly tightened, the helical focusing movement is checked and the bayonet ring fixed relative to the mount body with set screws 052.

Assembled Quick-Change Mount:

Checking of preset diaphragm: the Preset Diaphragm Ring 083 should readily spring from any setting to the smallest aperture.

1 2

Checking of indicator mechanism: (keep preset diaphragm ring at "open" setting) the Diaphragm Intermediate Ring 037 must move freely from one end stop to the other.

1 2

Checking of planar trueness: Maximum wobble between shutter seating of bayonet ring 001 (reference surface) and face of rear mount 008 (lens seating): 0.03 mm.

(Gauge Lz 2 1111 806 000).

COMPUR QUICK-CHANGE LENS MOUNT

Repair Instructions

COMPUR Quick-Change Lens Mounts CN-1111-885 and CN-1111-886 for Wide and Wide-Reflex shutters with LV follow-up system

Cleaning of shutter:

Use only clean, grease-free trichloroethylene or perchloroethylene for cleaning the quick-change mount. Parts coated with green anti-friction lacquer and the assembled diaphragm should never be wet-cleaned. In addition, care should be taken not to damage the anti-friction lacquer. Wet-cleaned parts should be completely dry before reinstallation.

Lubricating instructions:

All moving parts are coated with anti-friction lacquer. This quick-change mount therefore does not require any lubrication.

Assembly and adjustment:

Diaphragm blade 010, diaphragm cover blade 012 and their bearings should be completely free from grease.

Calk the diaphragm cover 009 between the cam slots into the rear mount 008.

The automatic diaphragm ring 083 and the diaphragm ring 013 are connected by a groove and a lug. From any setting, the automatic diaphragm ring 083 must rapidly snap to the smallest aperture.

Mount sub-assembly (parts 008 to 051)

Should it prove necessary to remove this sub-assembly from the bayonet ring 001, it is indispensable to mark the position of the rear mount 008 in relation to the bayonet ring 001 before loosening the screws, since the relative position of these two parts determines the fitting of the diaphragm.

Tighten screws 109 firmly, if necessary apply glyptal.

The relative position of mount body 020 and bayonet ring 001 is fixed by means of a pin. When assembling these parts (i. e. this sub-assembly), special care should be taken to ensure that all seating faces are perfectly clean and that the

screws 048 are tightened uniformly so that the maximum values allowed for eccentricity and wobble will not be exceeded.

Concentricity and planar trueness test:

Concentricity:
Maximum eccentricity between rear lens component (mount 008) and front lens component (mount body 020): 0.02 mm.

Planar trueness:
Maximum wobble between front of rear mount (008) and front lens seating face of mount body 020 : 0.01 mm.

CN-1111-885
Plate

1

1

1

1

1

1

1

Compur Shutter Repair Manual

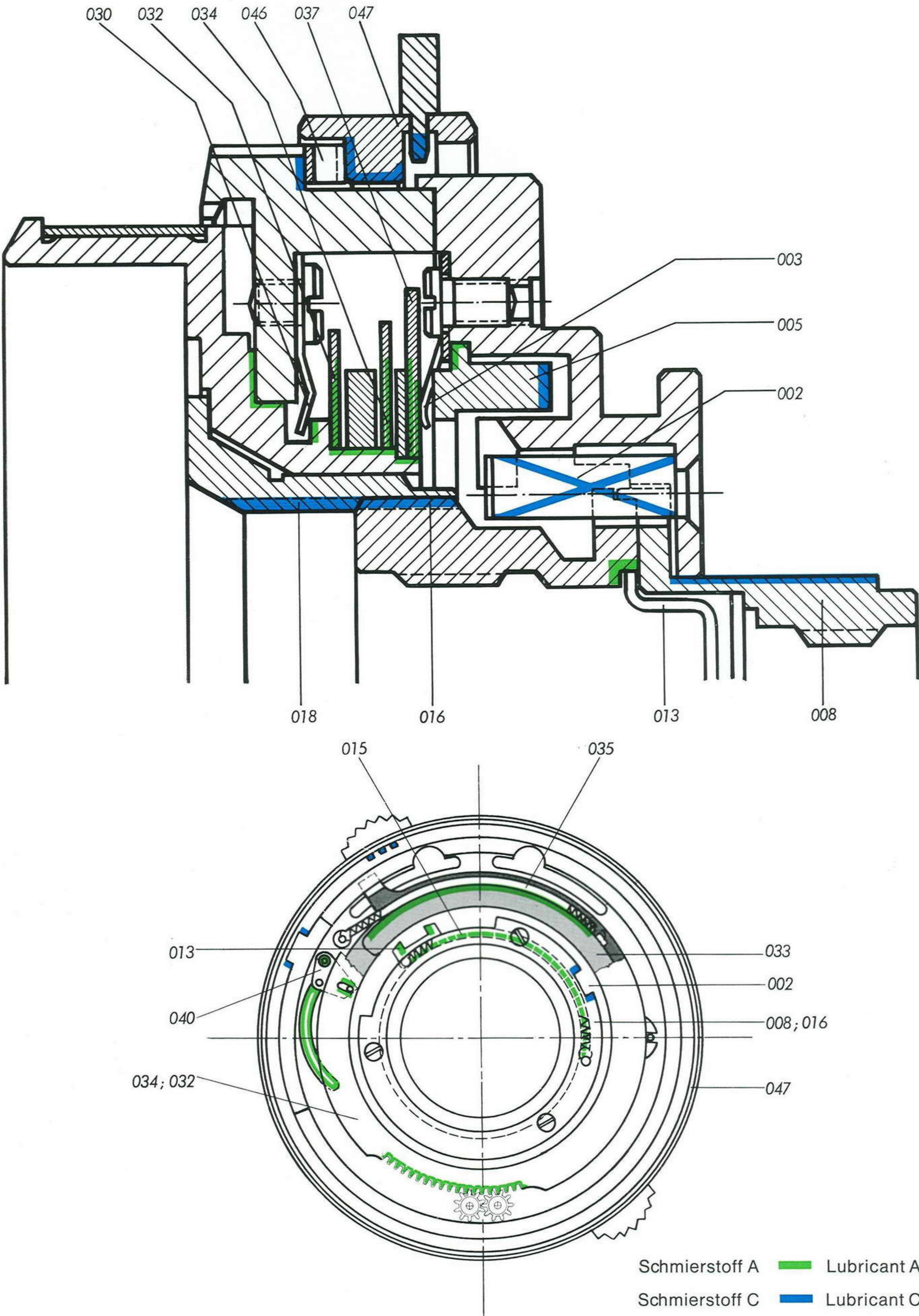
Section 11

Lubrication schemes for quick-change mounts

COMPUR-WECHSELFASSUNG

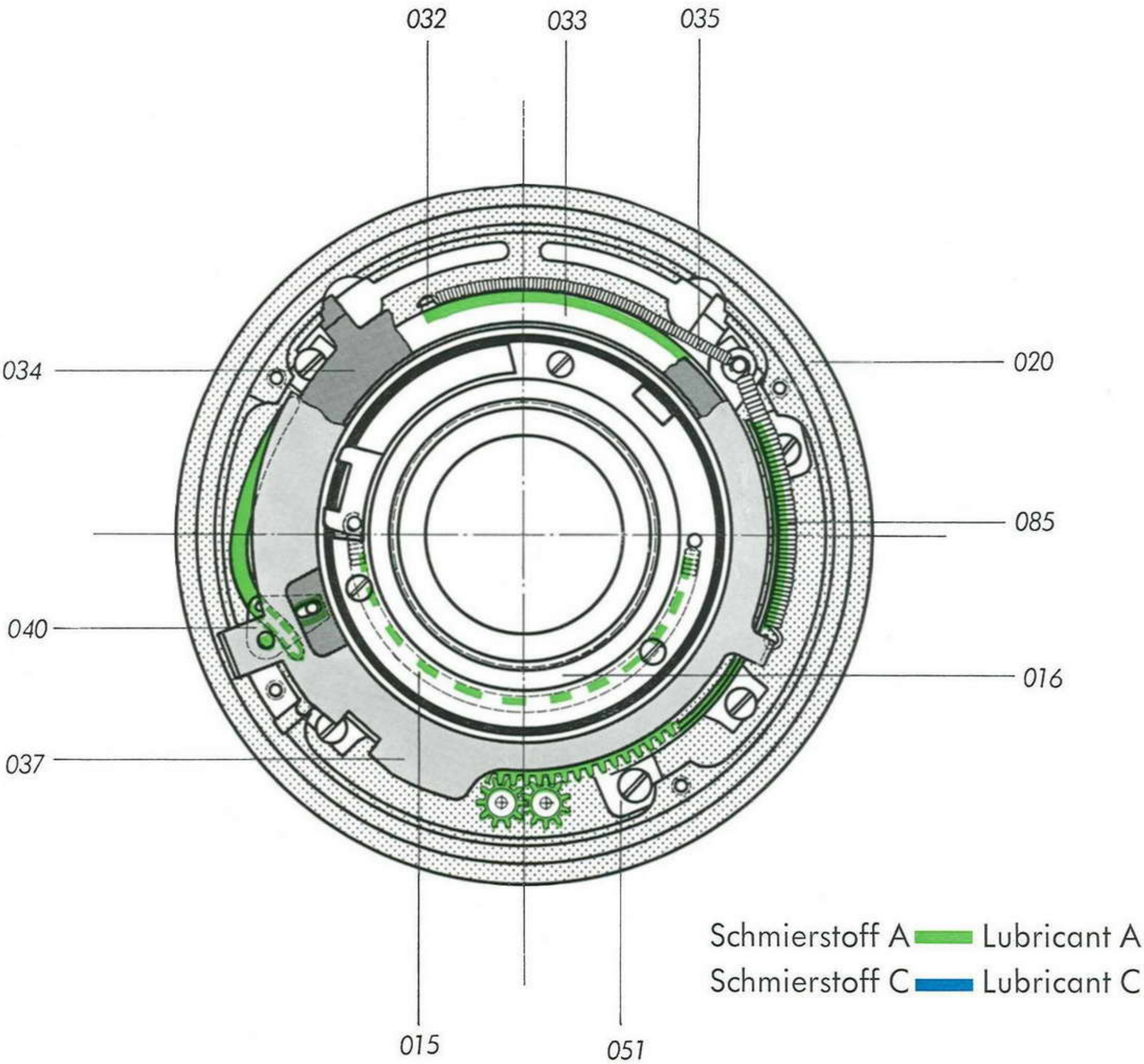
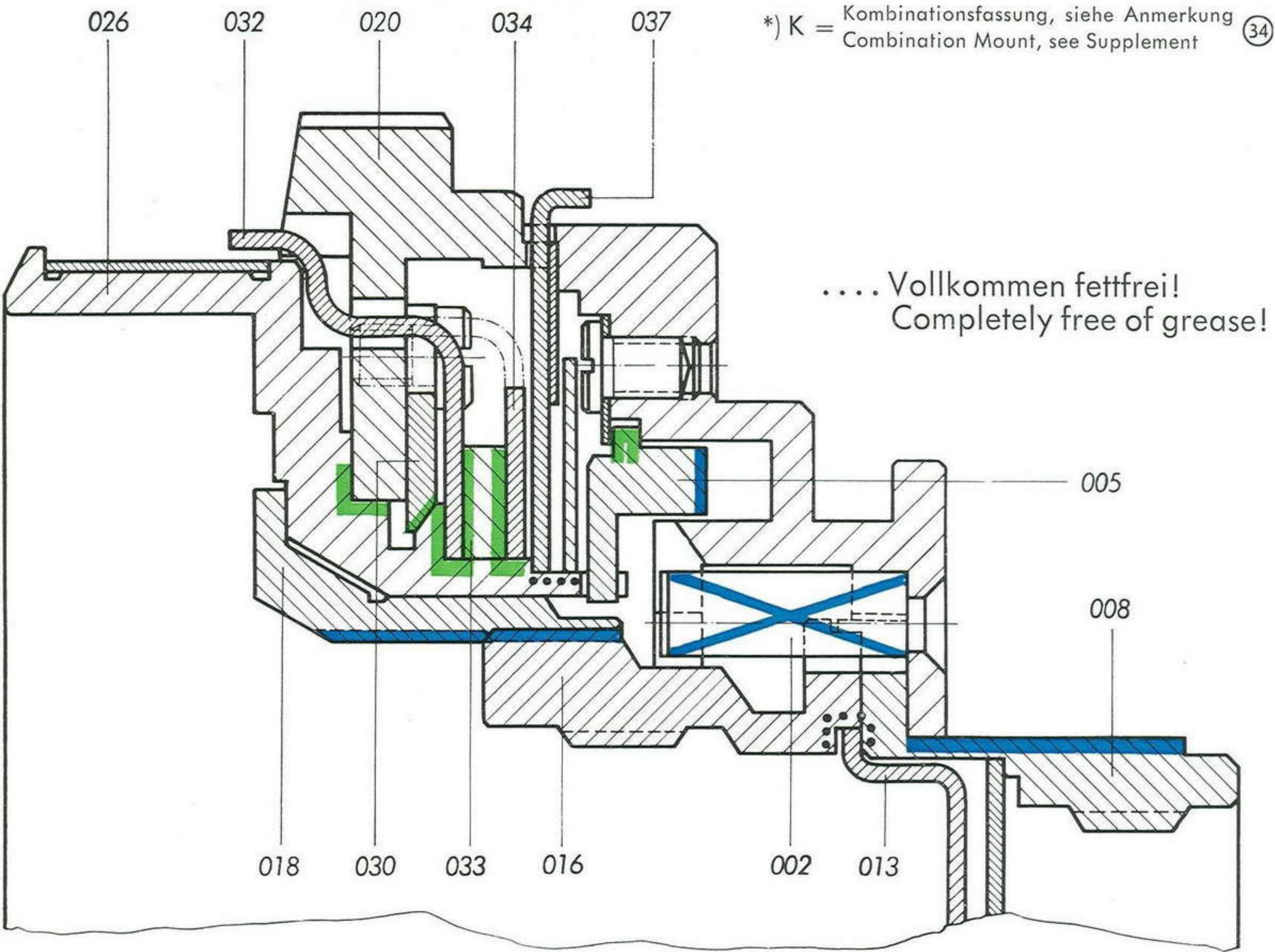
Schmierplan - Lubrication Schedule

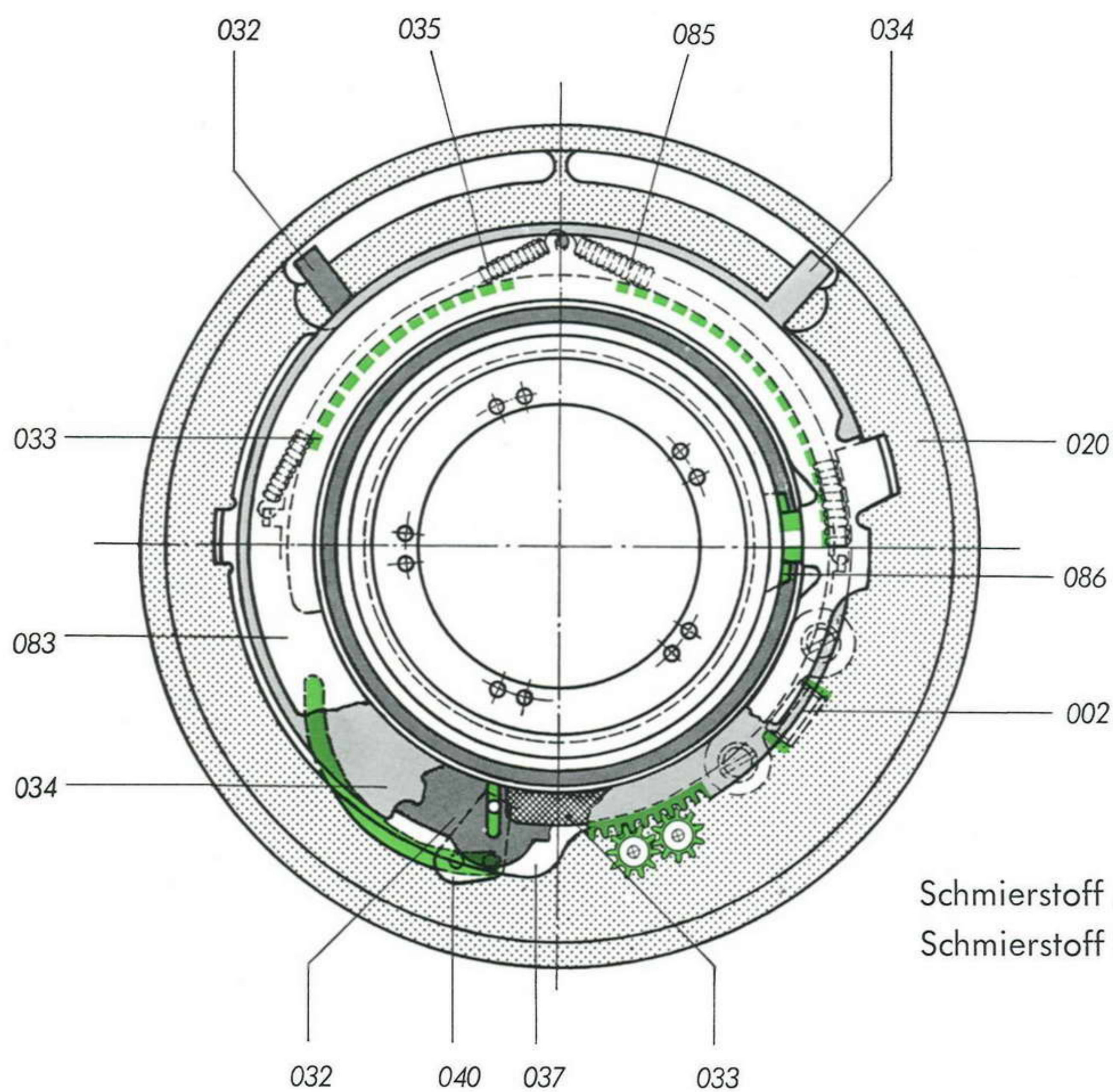
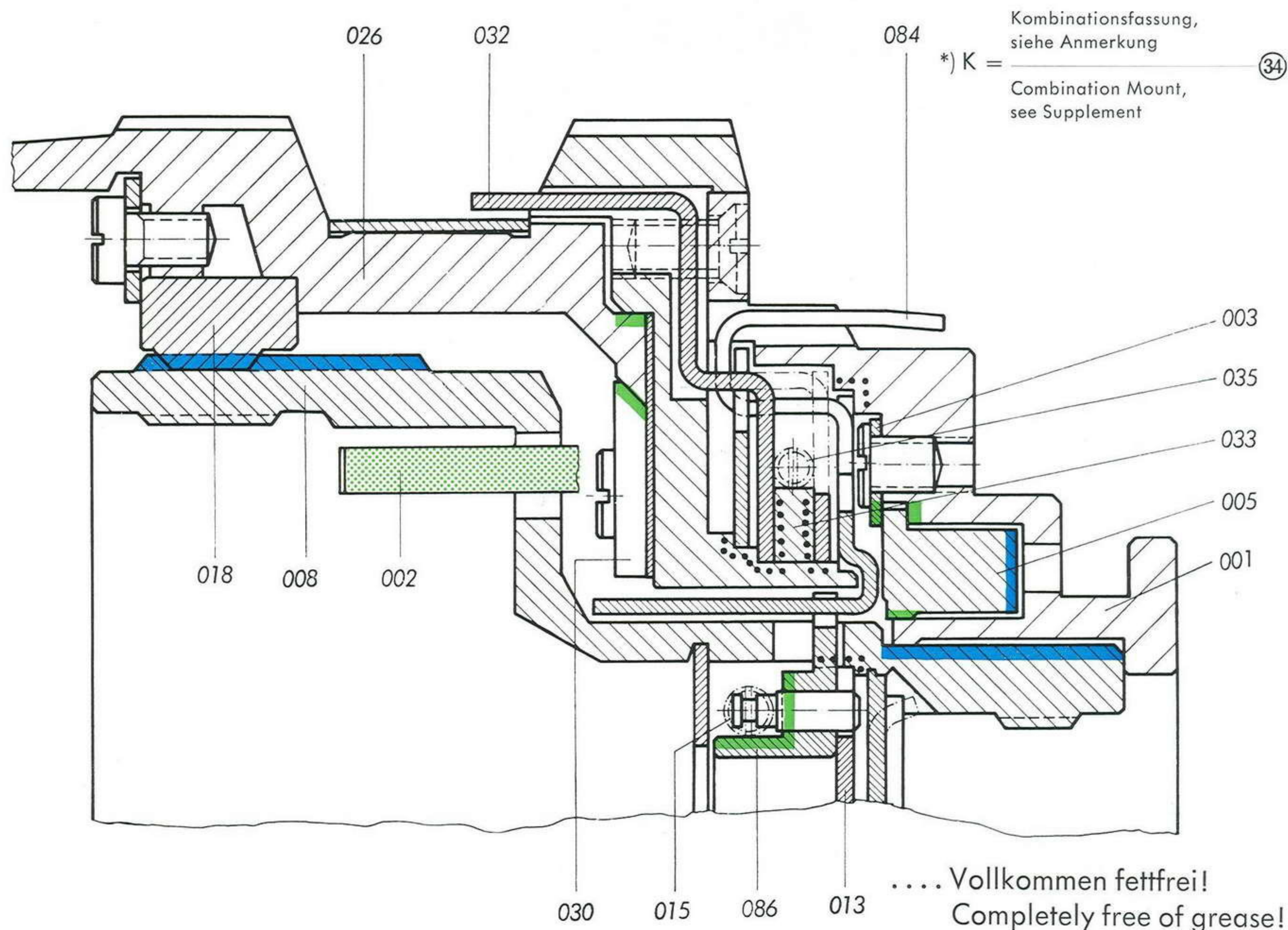
CN-1111-800



COMPUR WECHSELFASSUNG
Schmierplan — Lubrication Schedule

CN-1111-851
Form A/1-K, A/2-K, B/1-K*)





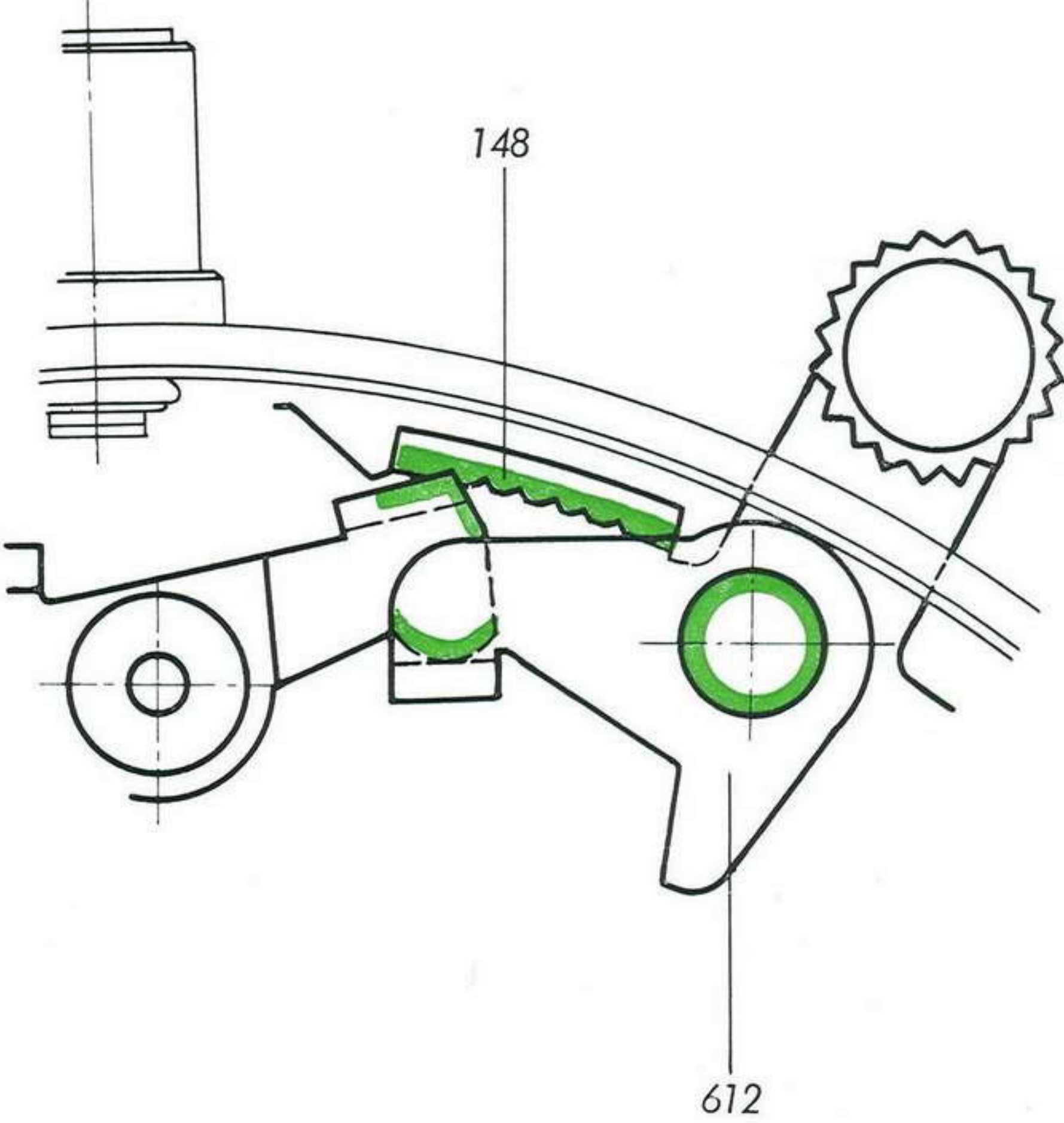
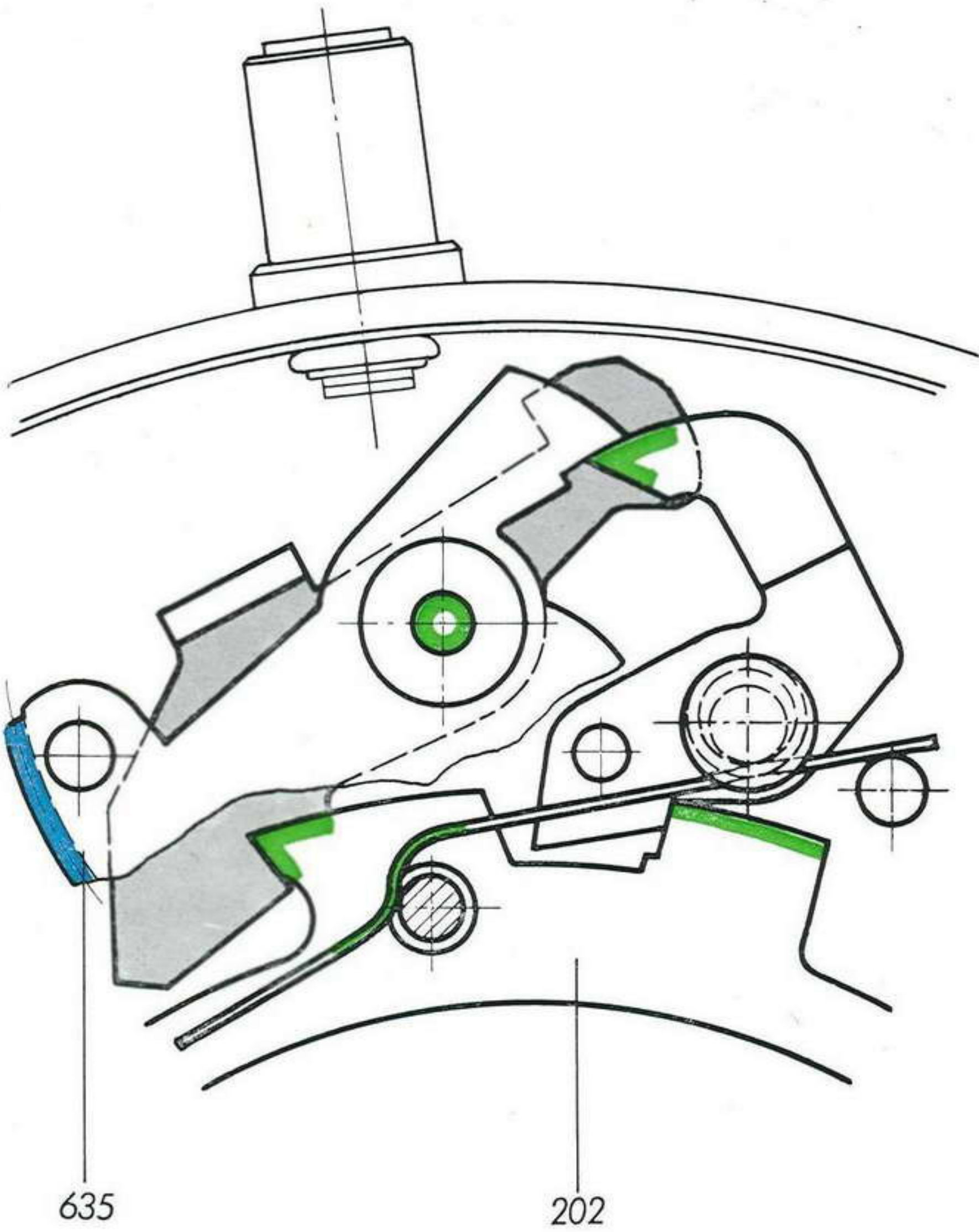
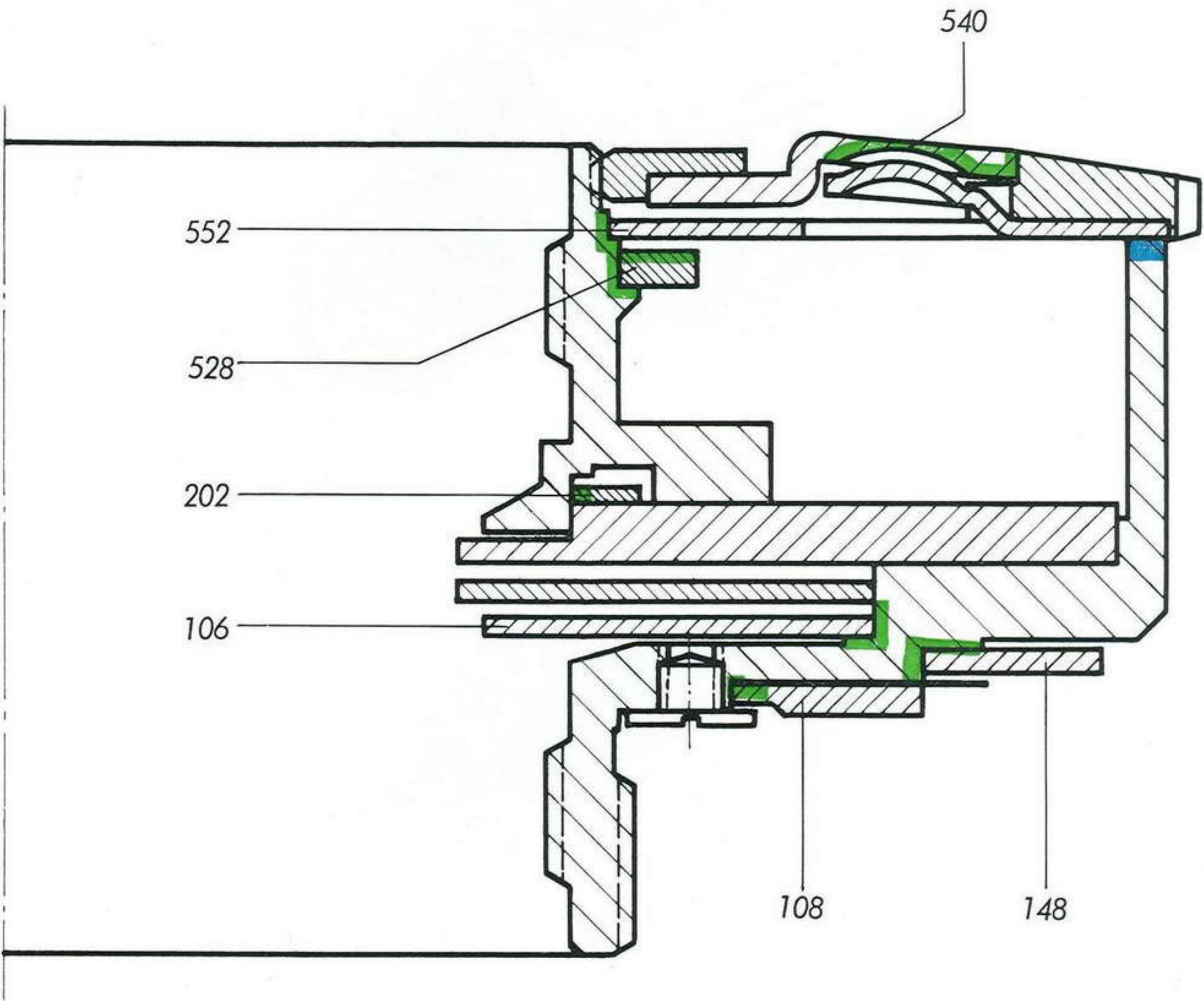
Compur Shutter Repair Manual

Section 12

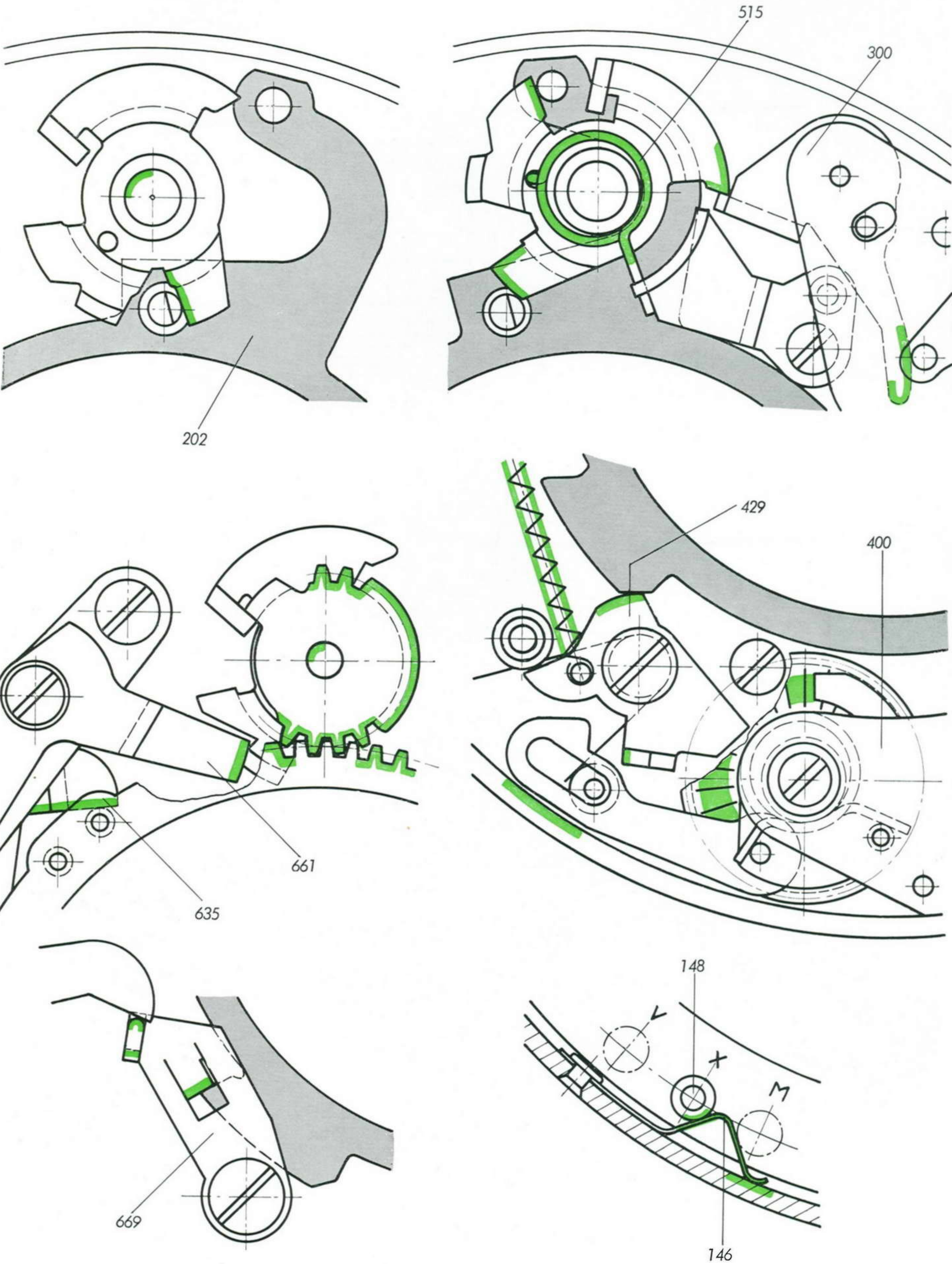
Lubrication schemes for shutters

SYNCHRO-COMPUR
Schmierplan - Lubrication Schedule

CN-1110-000



Schmierstoff A ■ Lubricant A
Schmierstoff C ■ Lubricant C

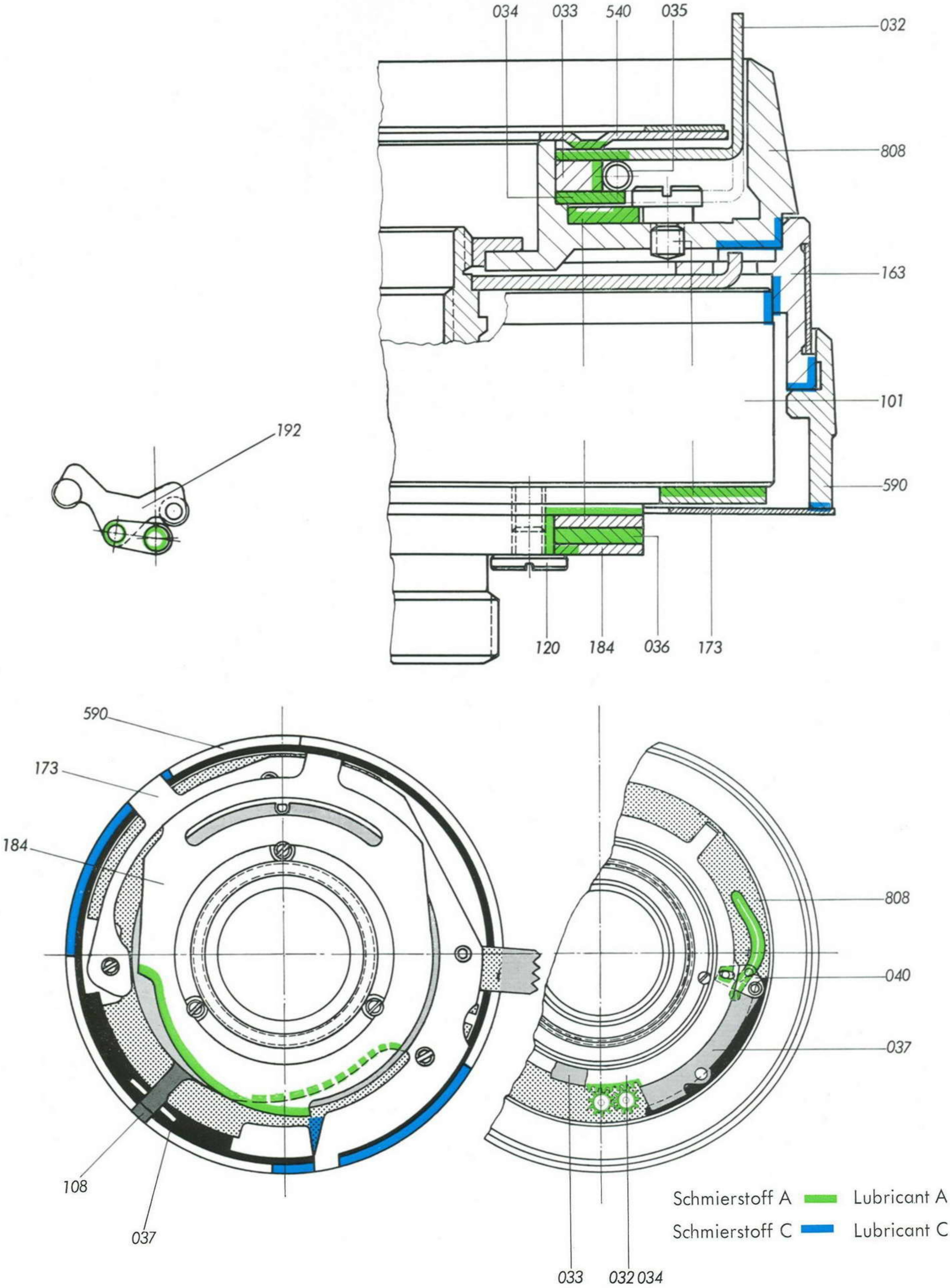


Schmierstoff A Lubricant A

SYNCHRO-COMPUR
Schmierplan - Lubrication Schedule

CN-1110-016
CN-1110-018

Ergänzend hierzu Schmierplan CN-1110-000 See supplementary Lubrication Schedule CN-1110-000

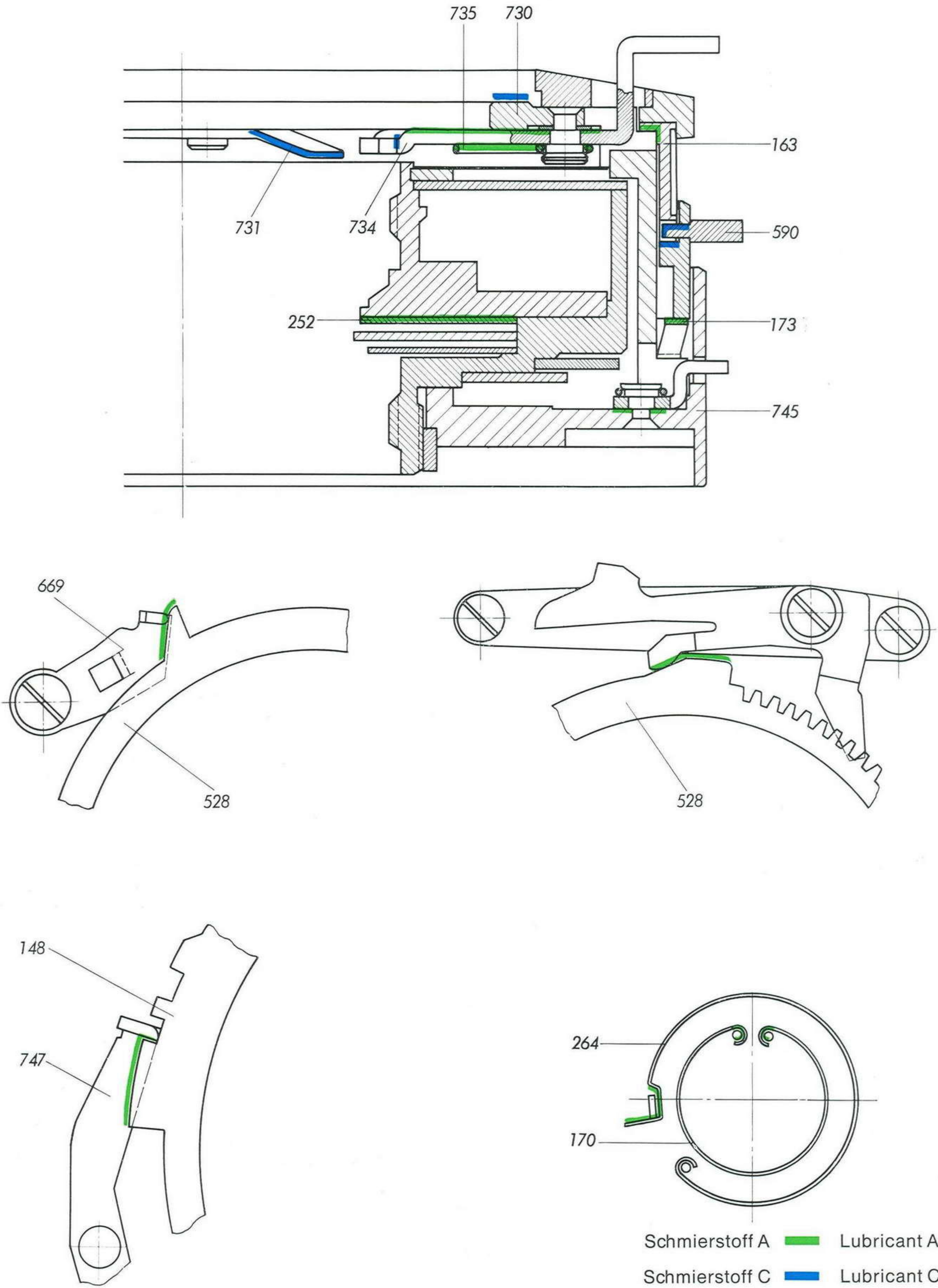


SYNCHRO - COMPUR
Schmierplan - Lubrication Schedule

CN-1110-020

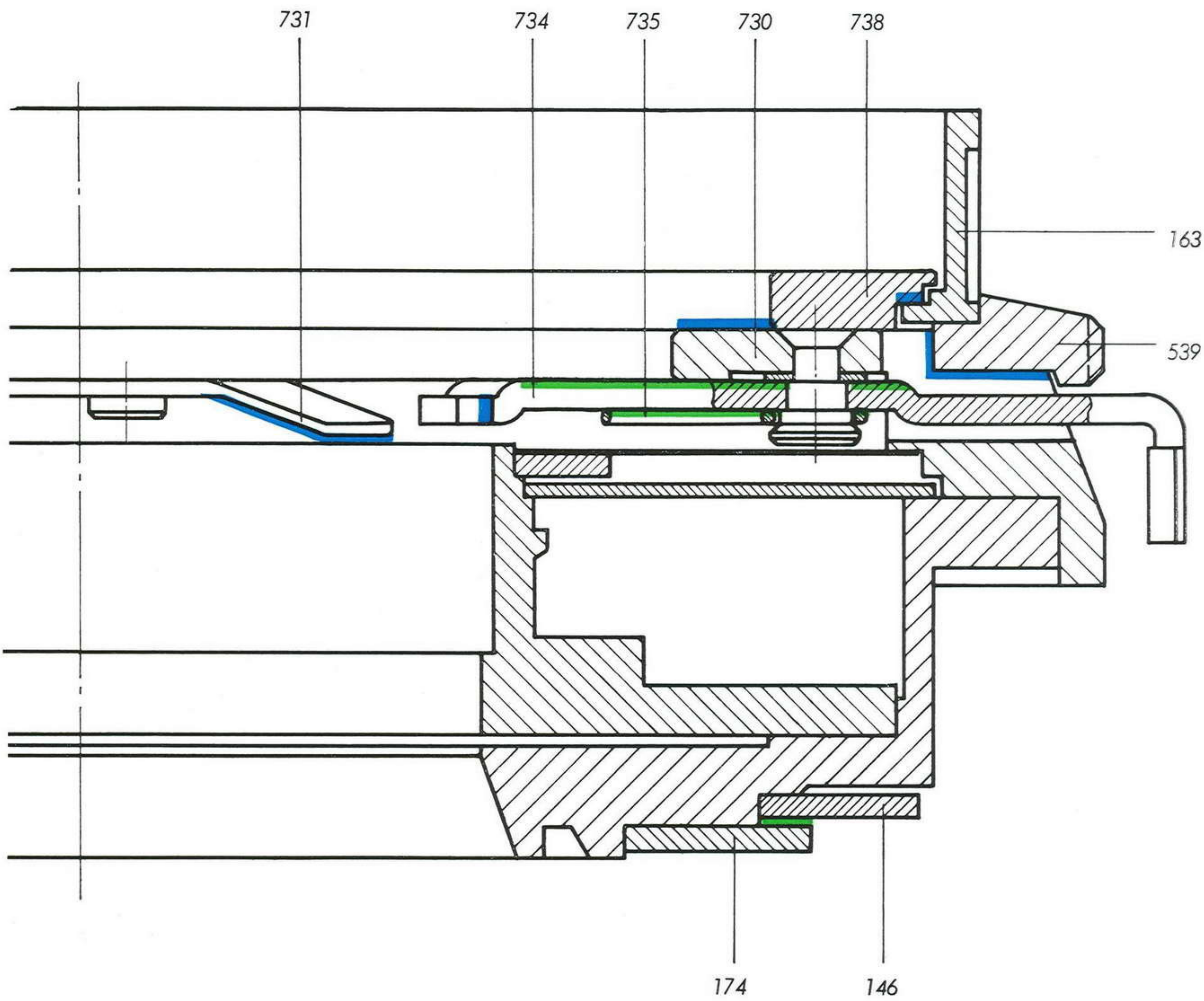
Ergänzend hierzu Schmierplan CN-1110-000

See supplementary Lubrication Schedule CN-1110-000



Ergänzend hierzu Schmierplan CN-1110-000

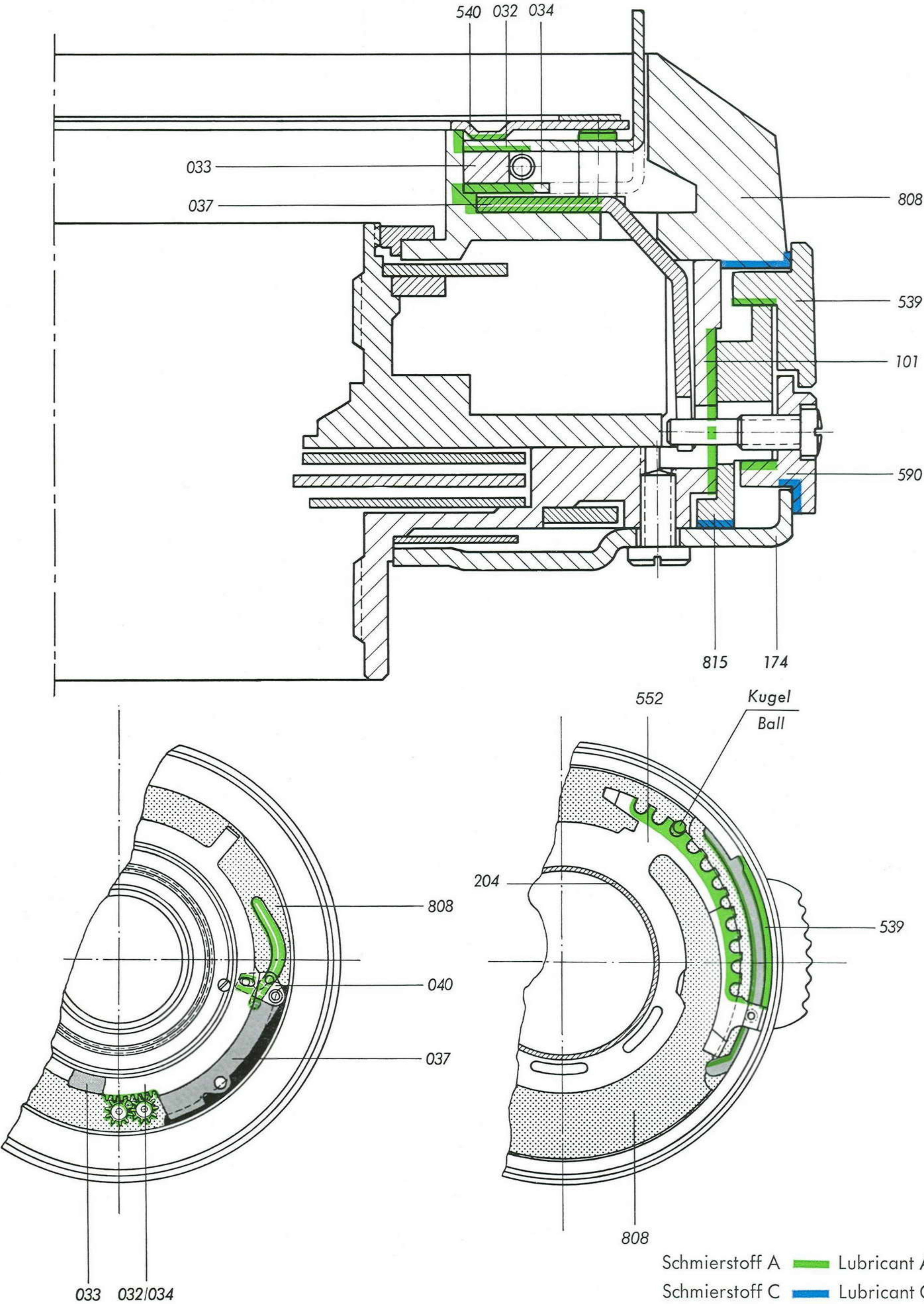
See supplementary Lubrication Schedule CN-1110-000



Schmierstoff A Lubricant A
Schmierstoff C Lubricant C

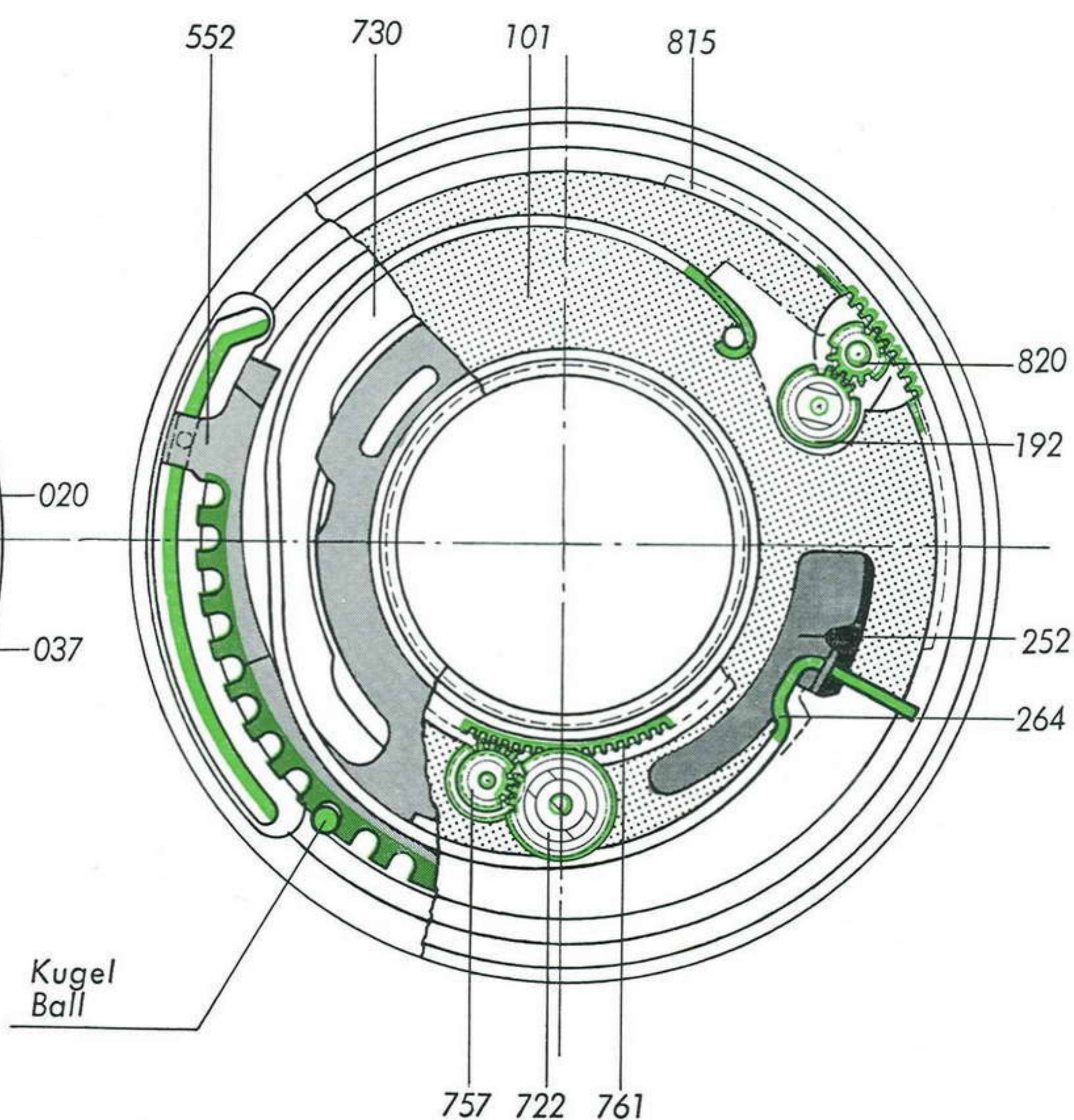
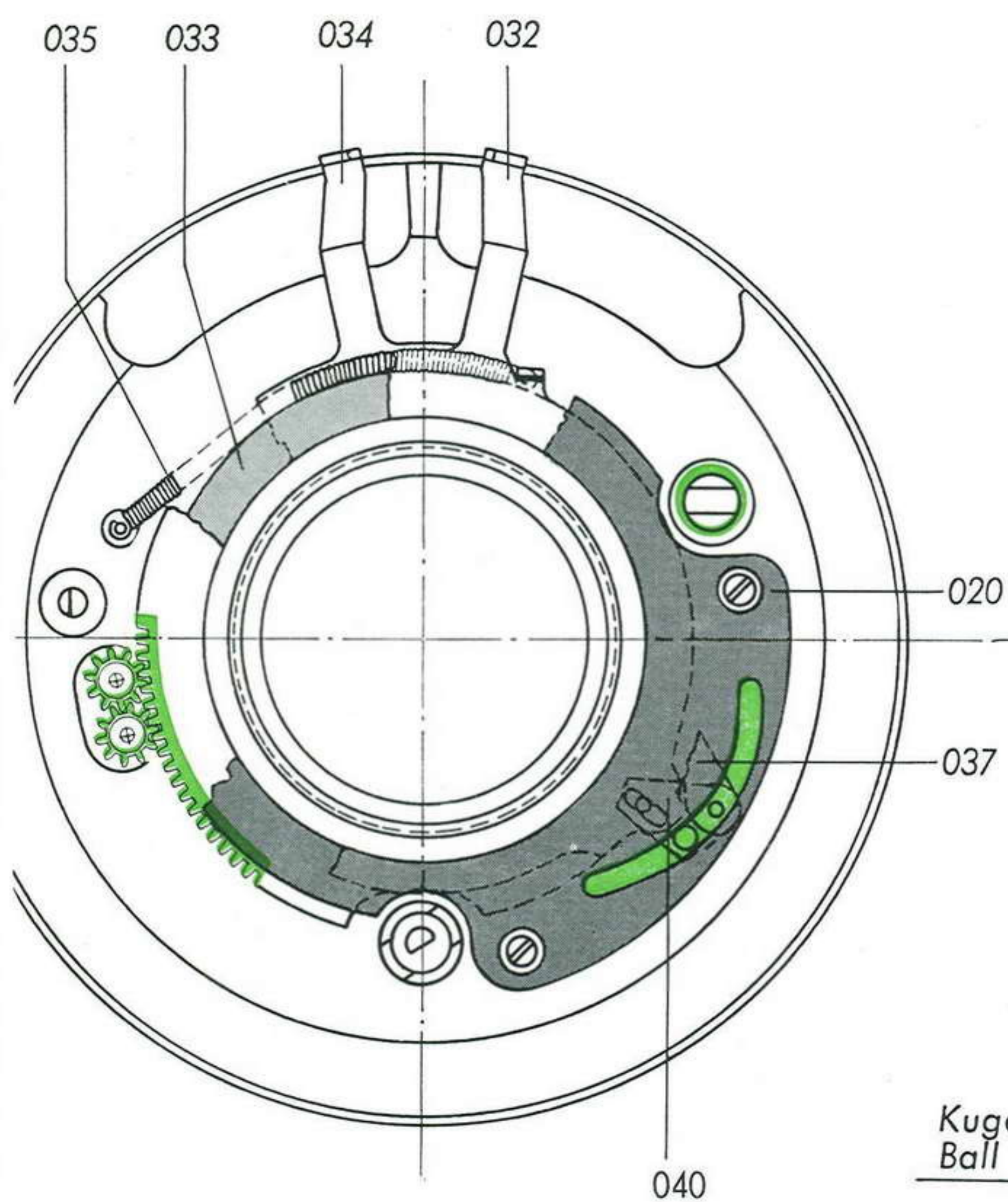
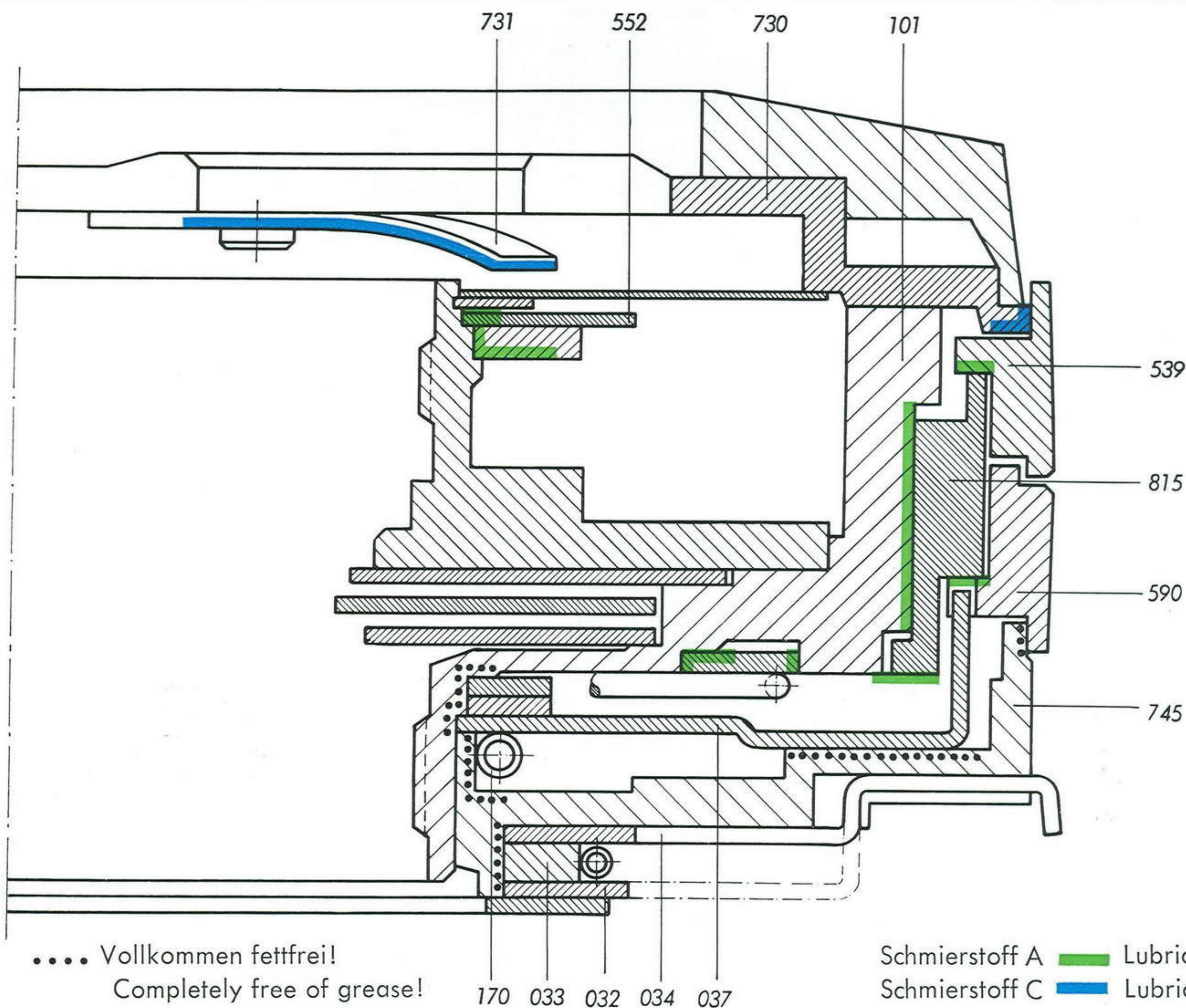
SYNCHRO-COMPUR
Schmierplan – Lubrication Schedule

CN-1110-026
CN-1110-025
CN-1110-019



SYNCHRO-COMPUR
Schmierplan – Lubrication Schedule

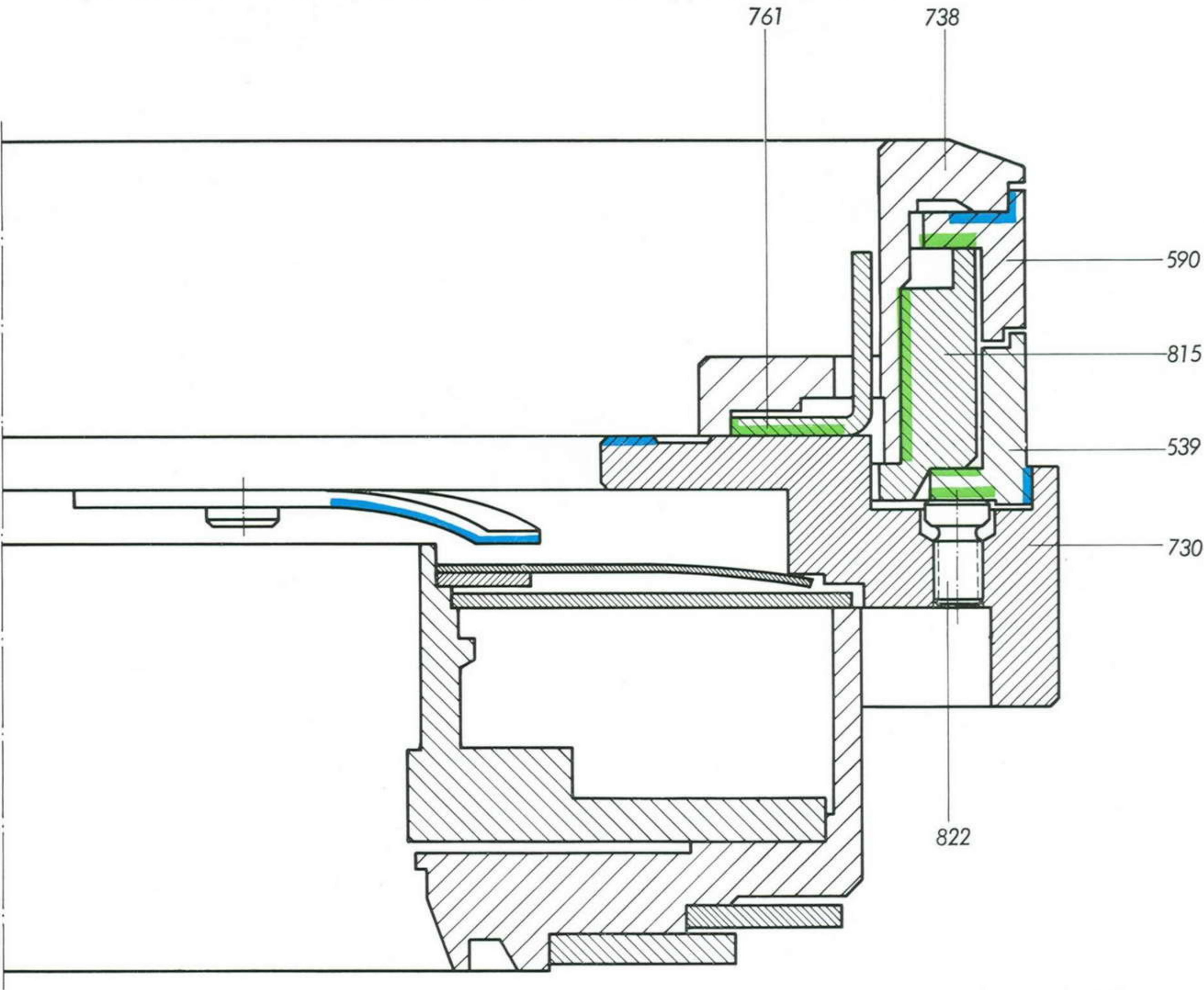
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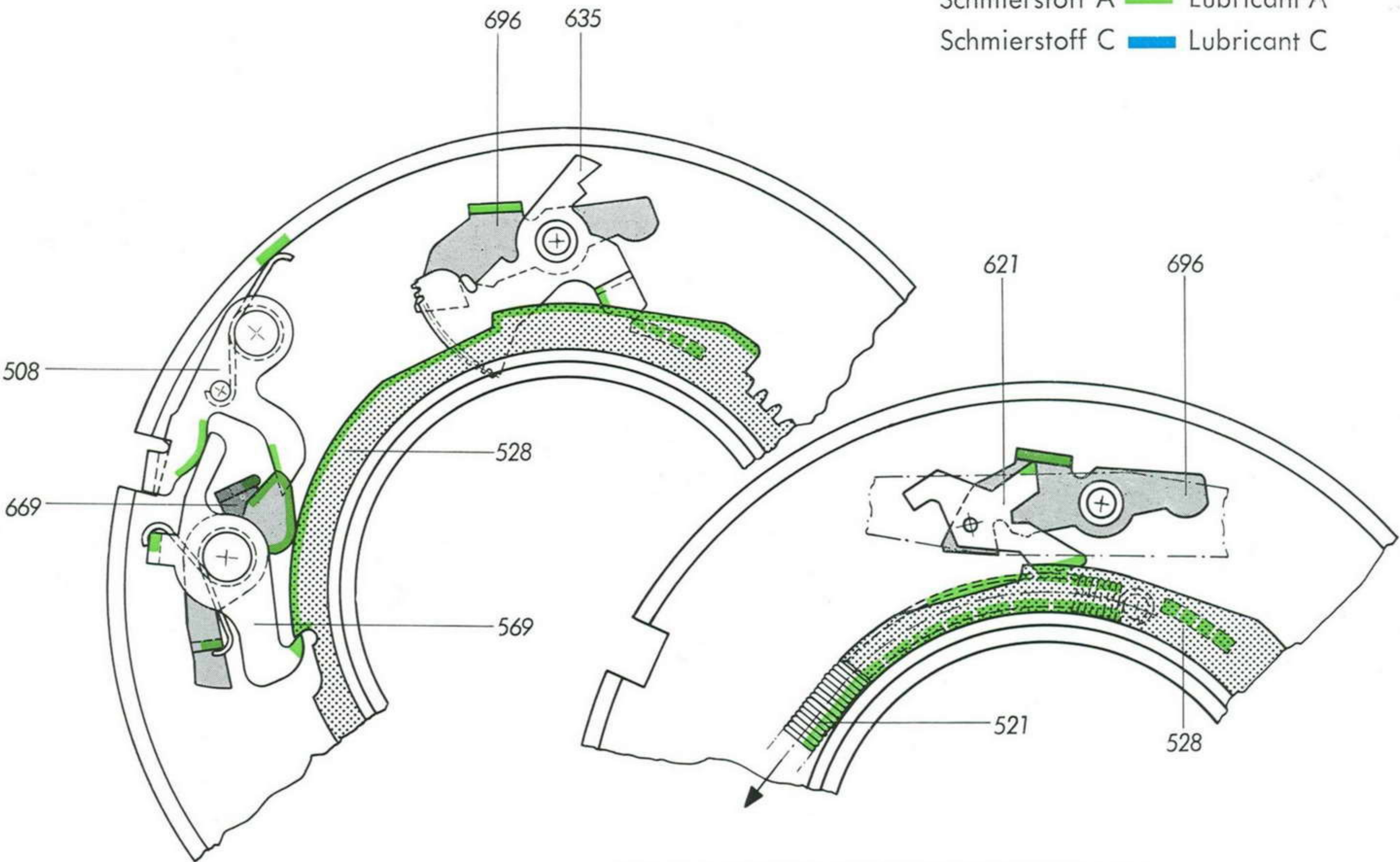
SYNCHRO-COMPUR
Schmierplan – Lubrication Schedule

CN-1110-034
CN-1110-035

Ergänzend hierzu Schmierplan CN-1110-000 See supplementary Lubrication Schedule CN-1110-000



Schmierstoff A  Lubricant A
Schmierstoff C  Lubricant C

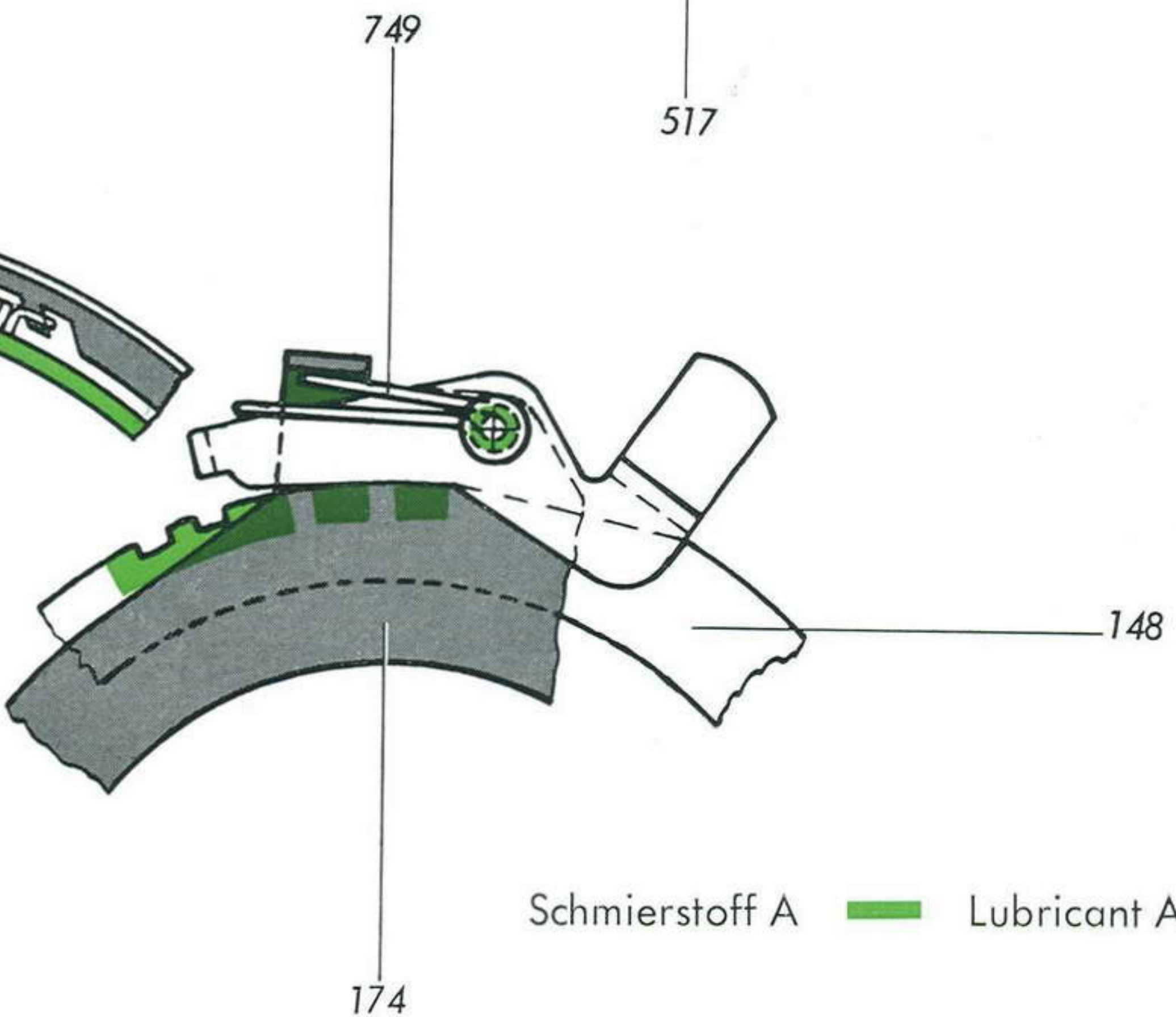
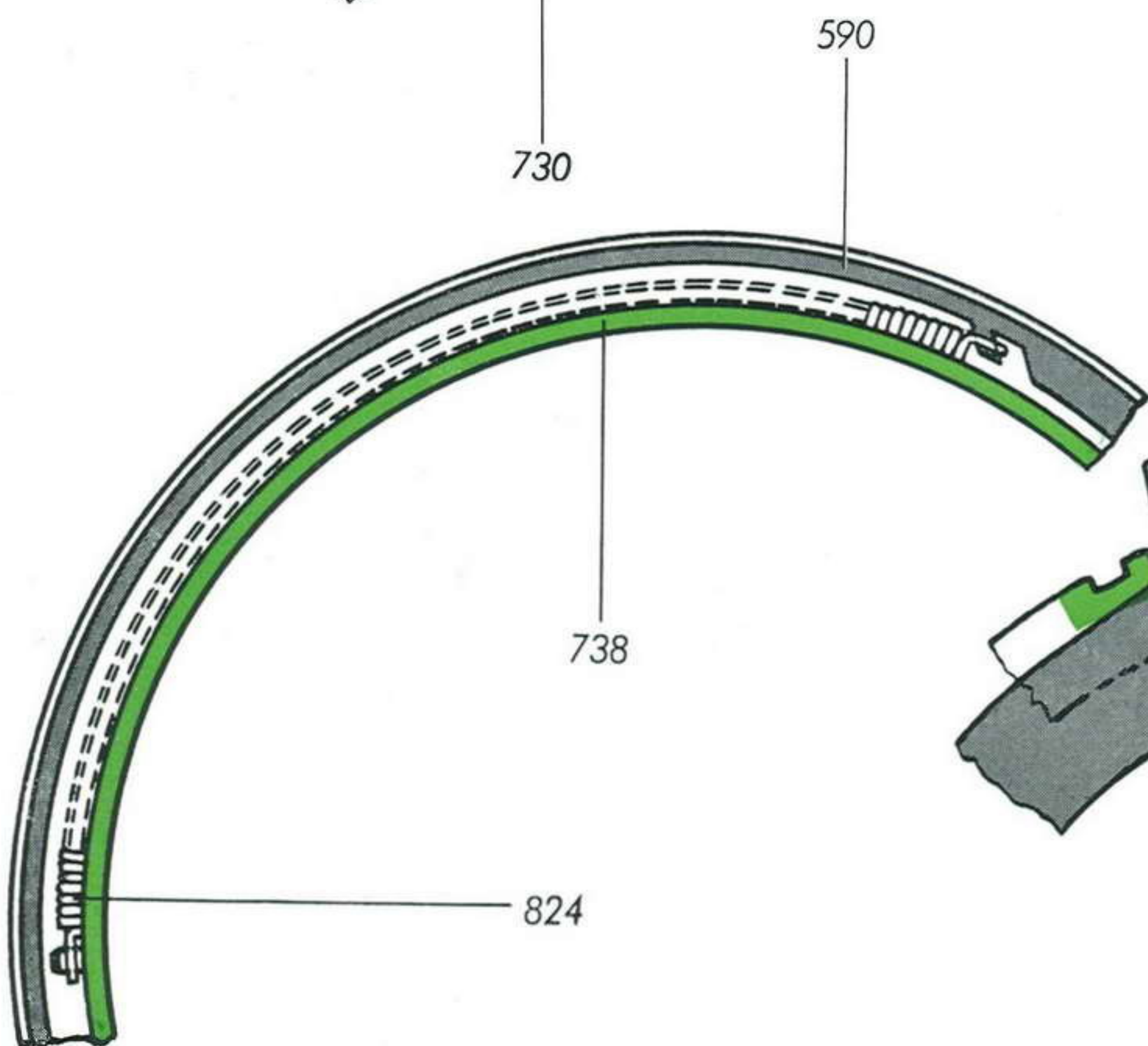
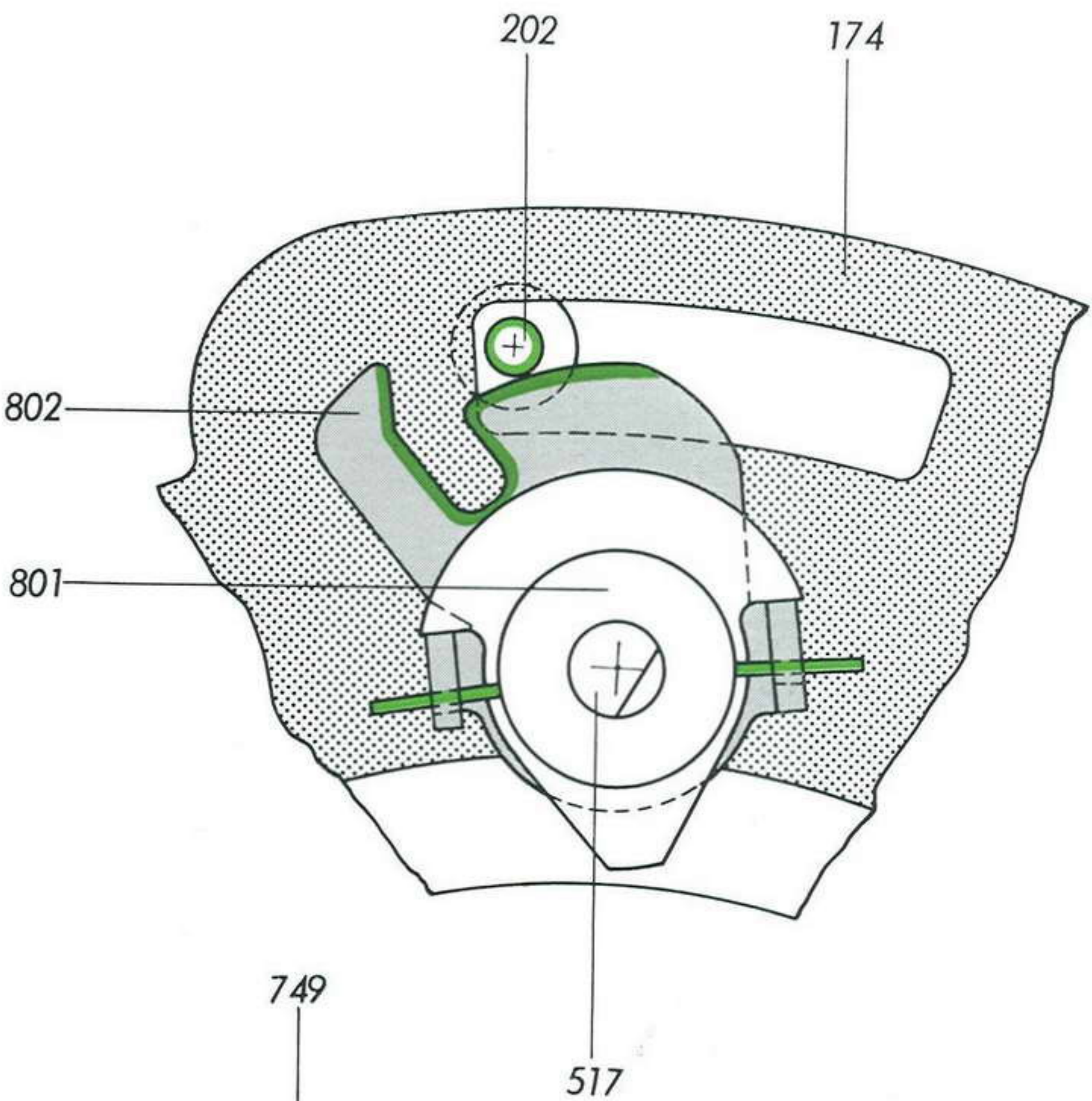
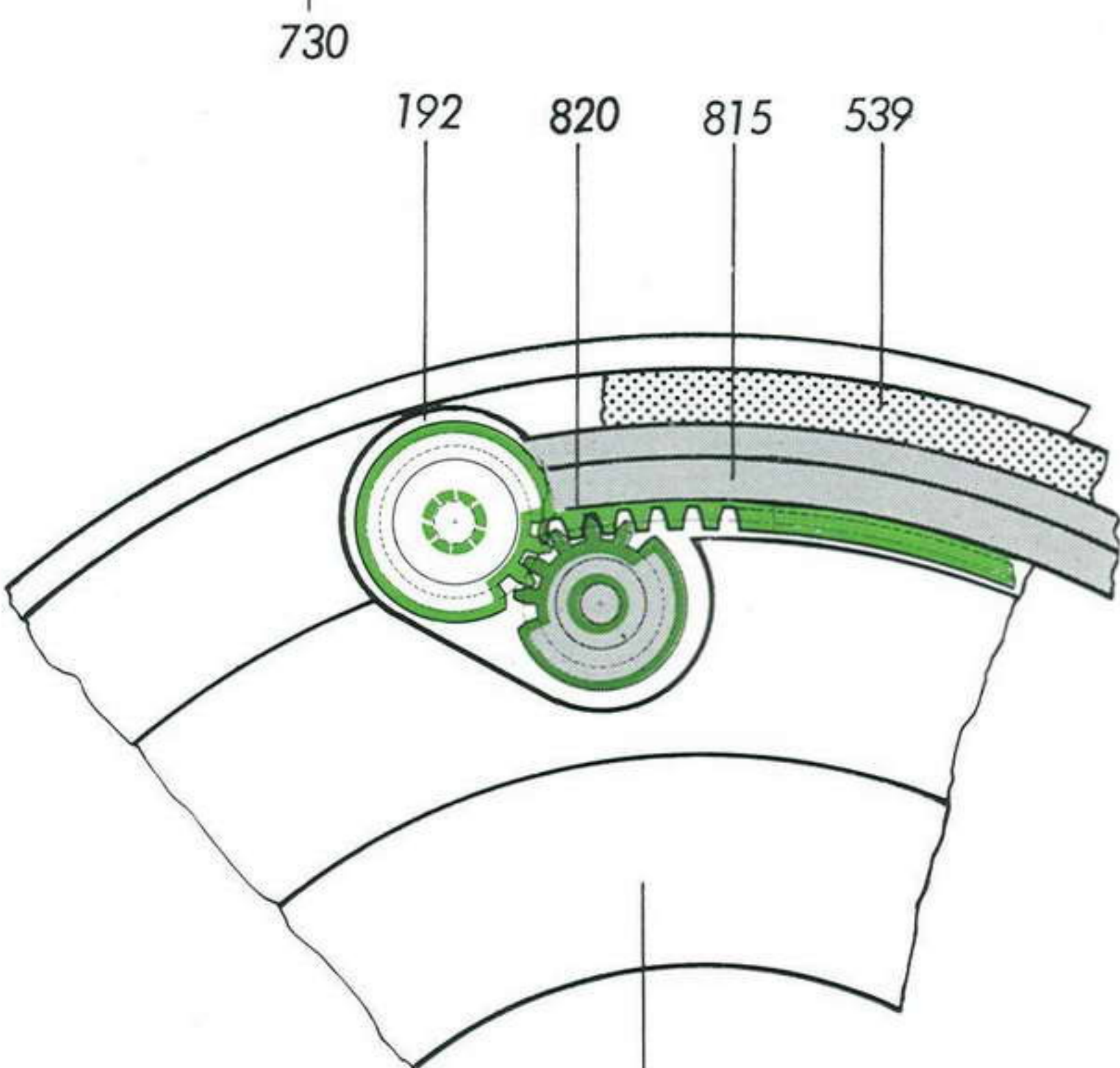
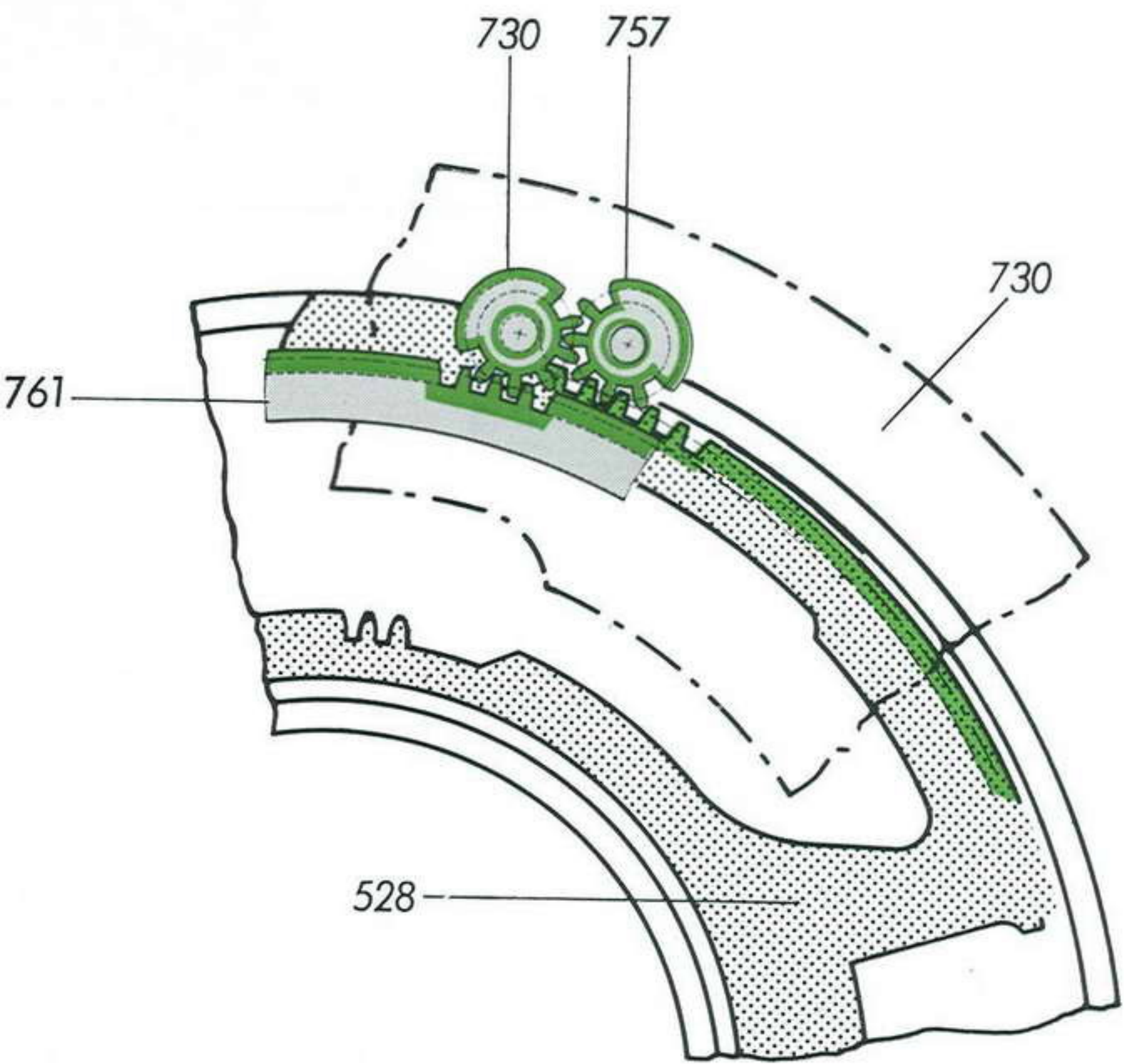
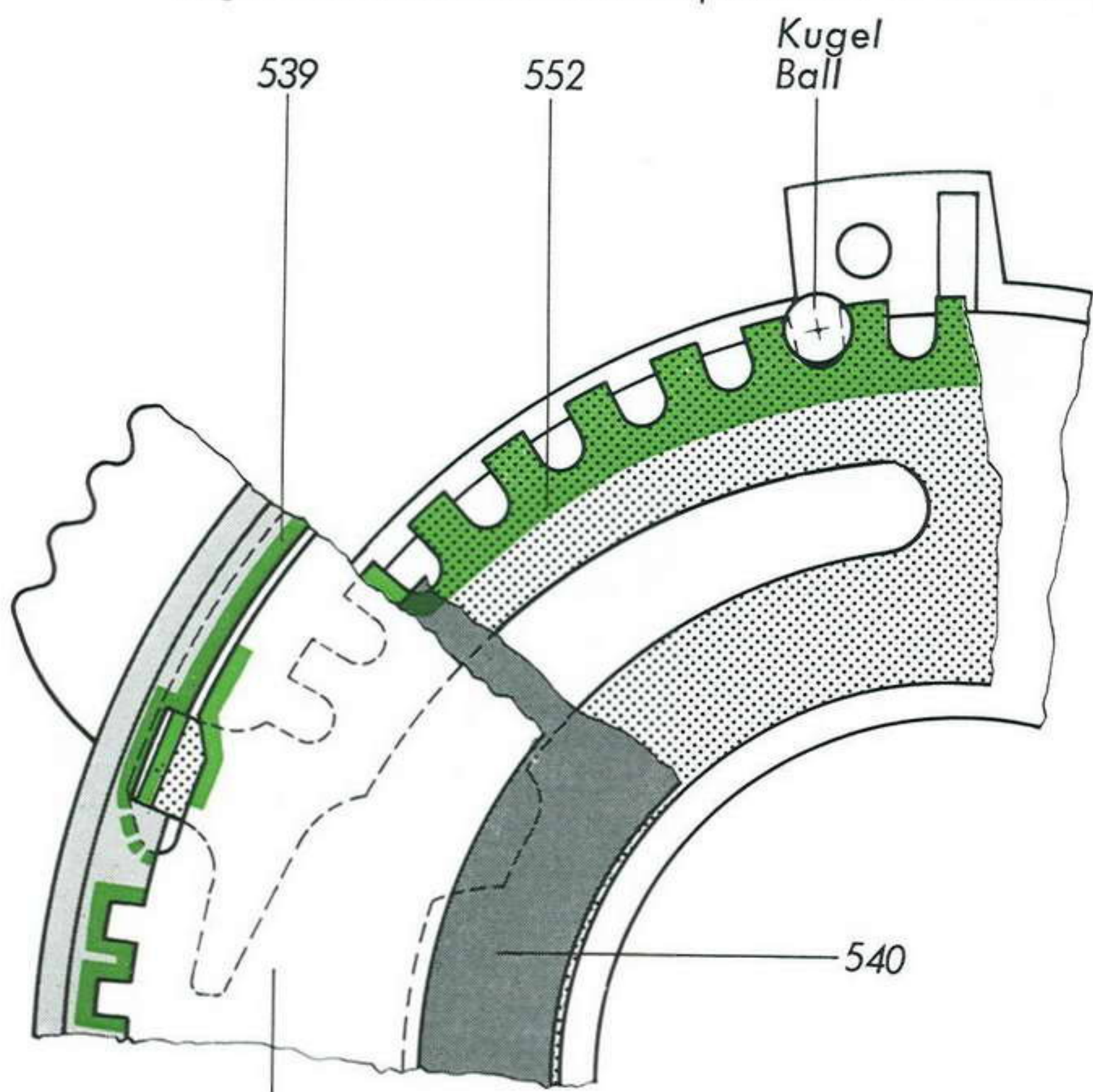


CN-1110-034
CN-1110-035

SYNCHRO - COMPUR
Schmierplan – Lubrication Schedule

Ergänzend hierzu Schmierplan CN-1110-000

See supplementary Lubrication Schedule CN-1110-000



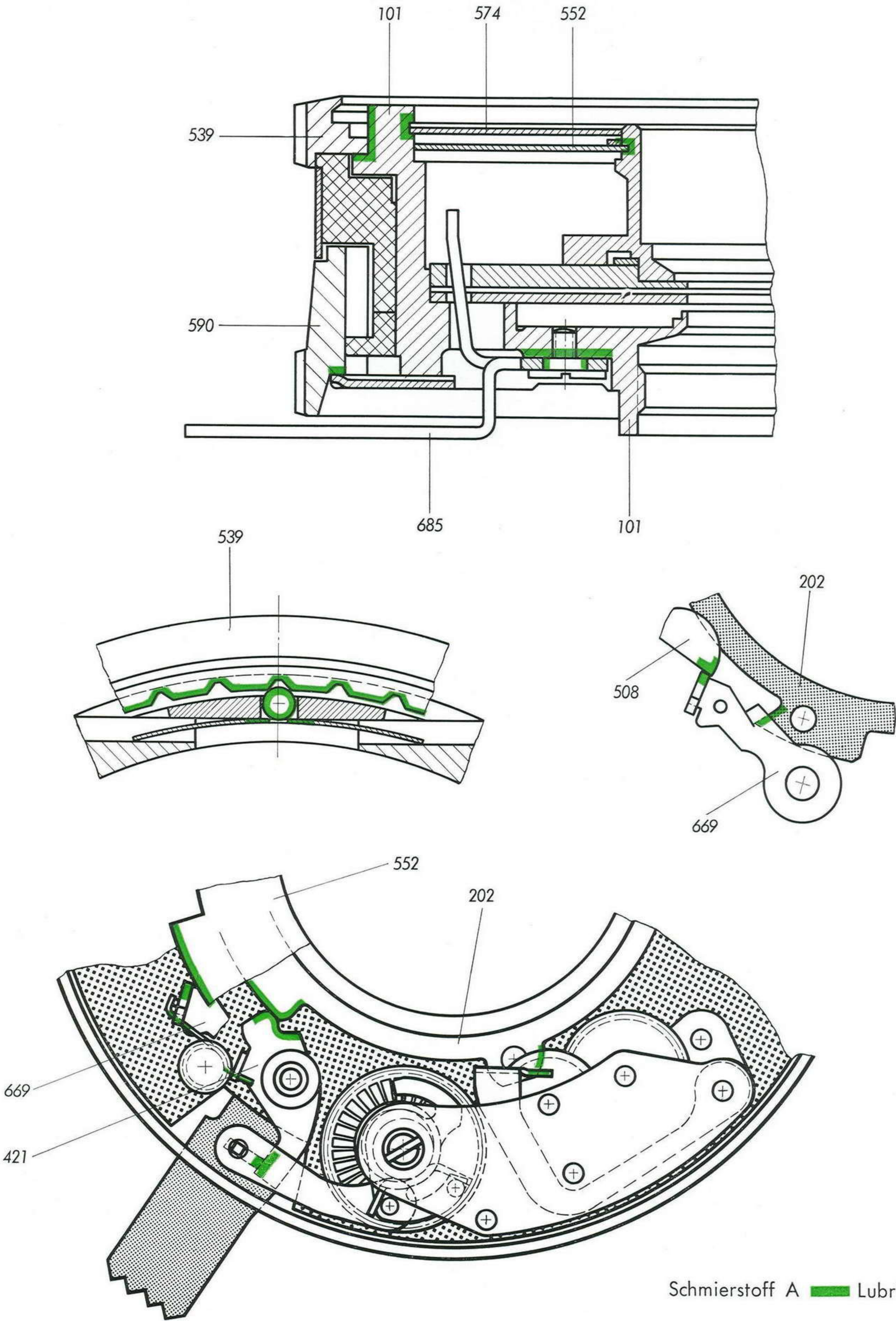
Schmierstoff A Lubricant A

COMPUR-RAPID
Schmierplan - Lubrication Schedule

CN-1112-004

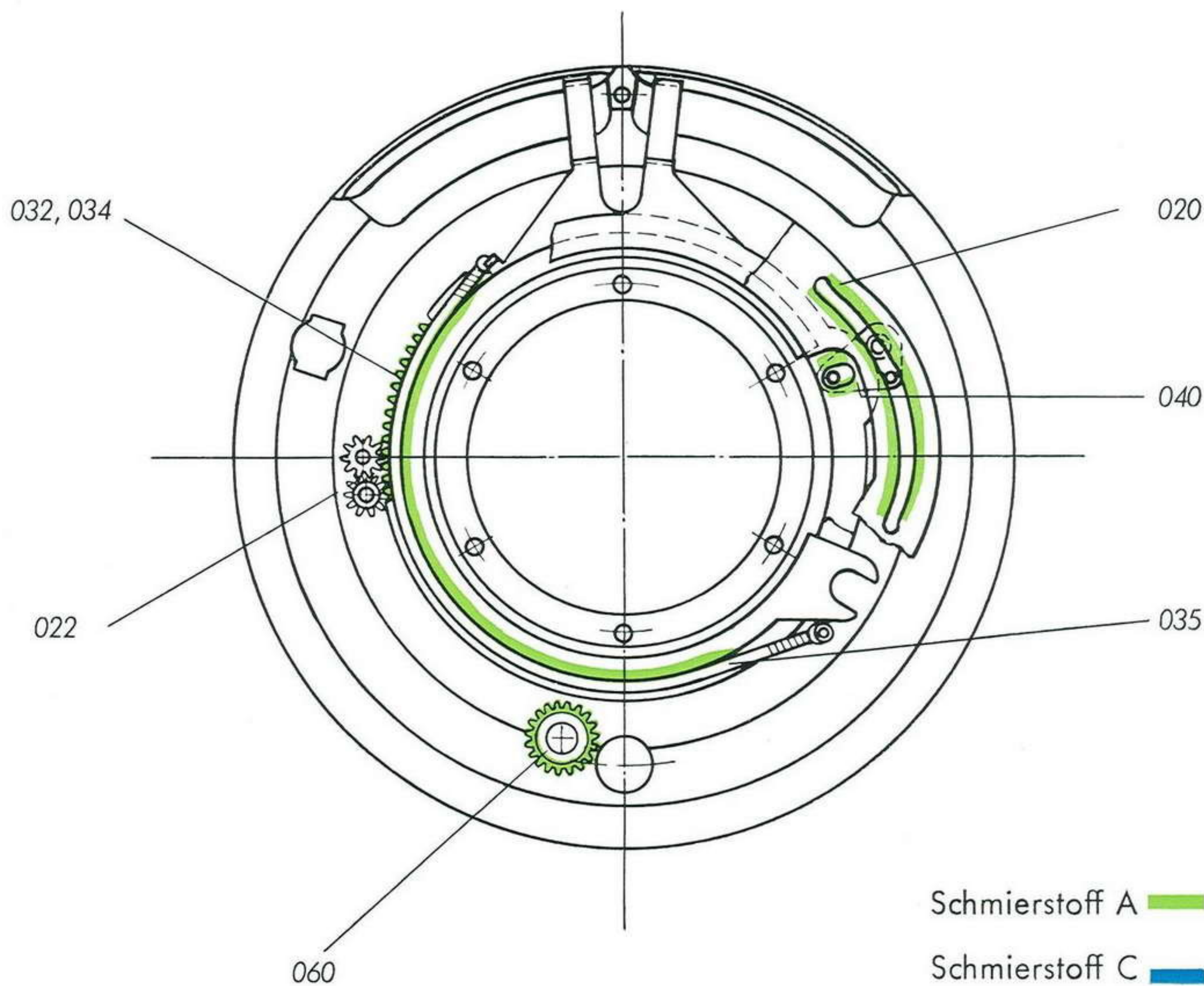
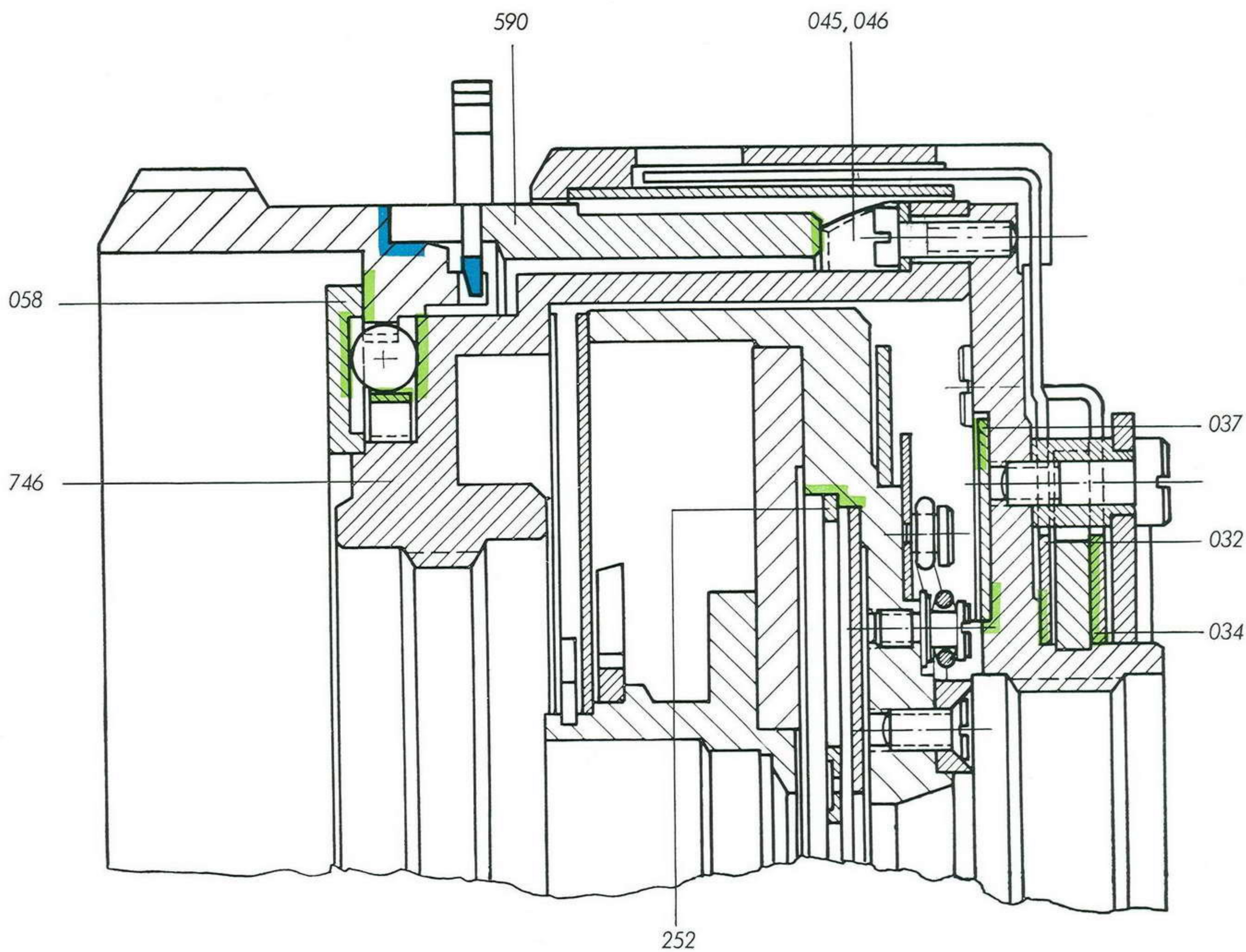
Ergänzend hierzu Schmierplan CN-1110-000



See supplementary Lubrication Schedule CN-1110-000

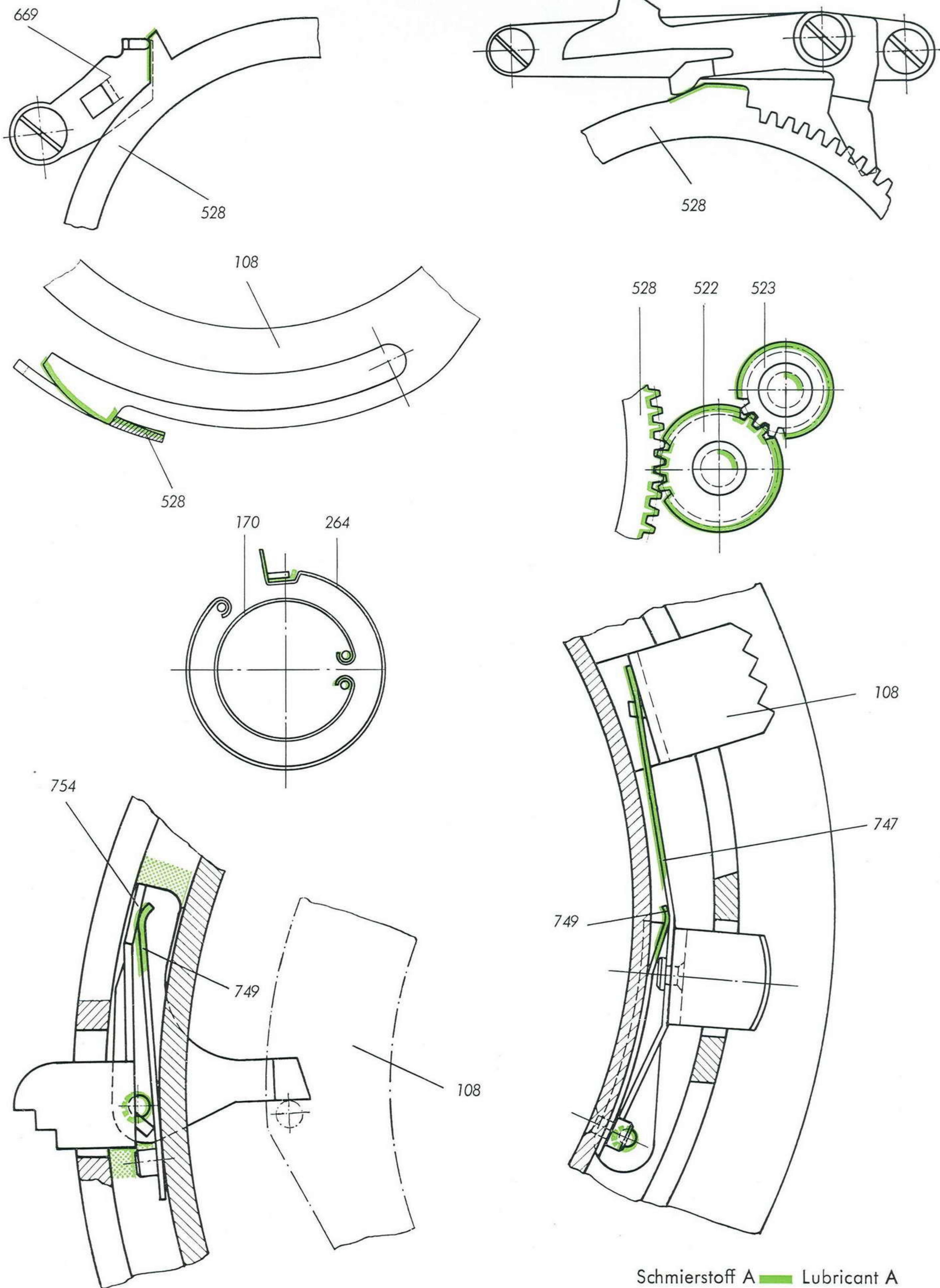


SYNCHRO-COMPUR
Schmierplan – Lubrication Schedule

CN-1210-022

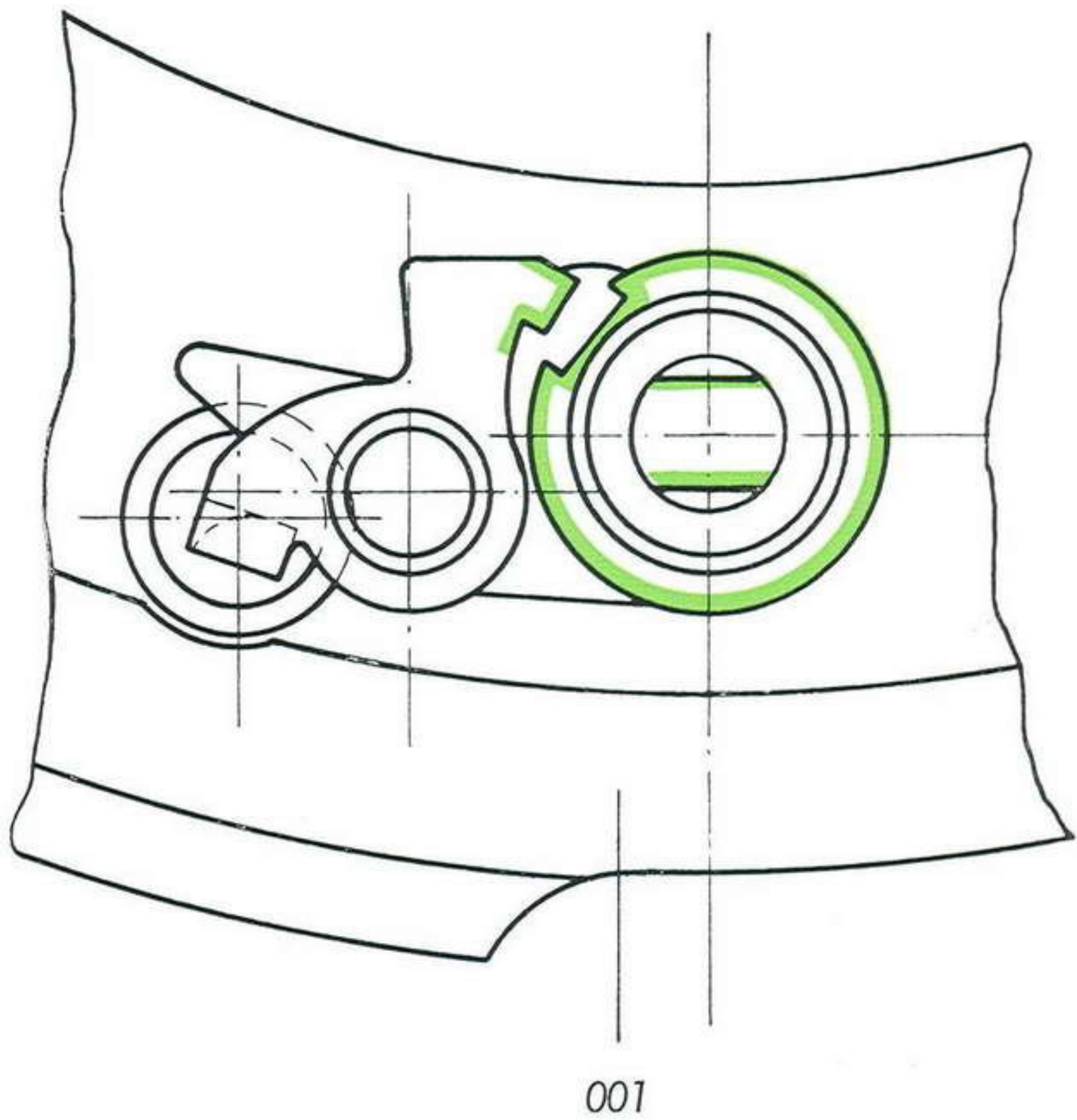
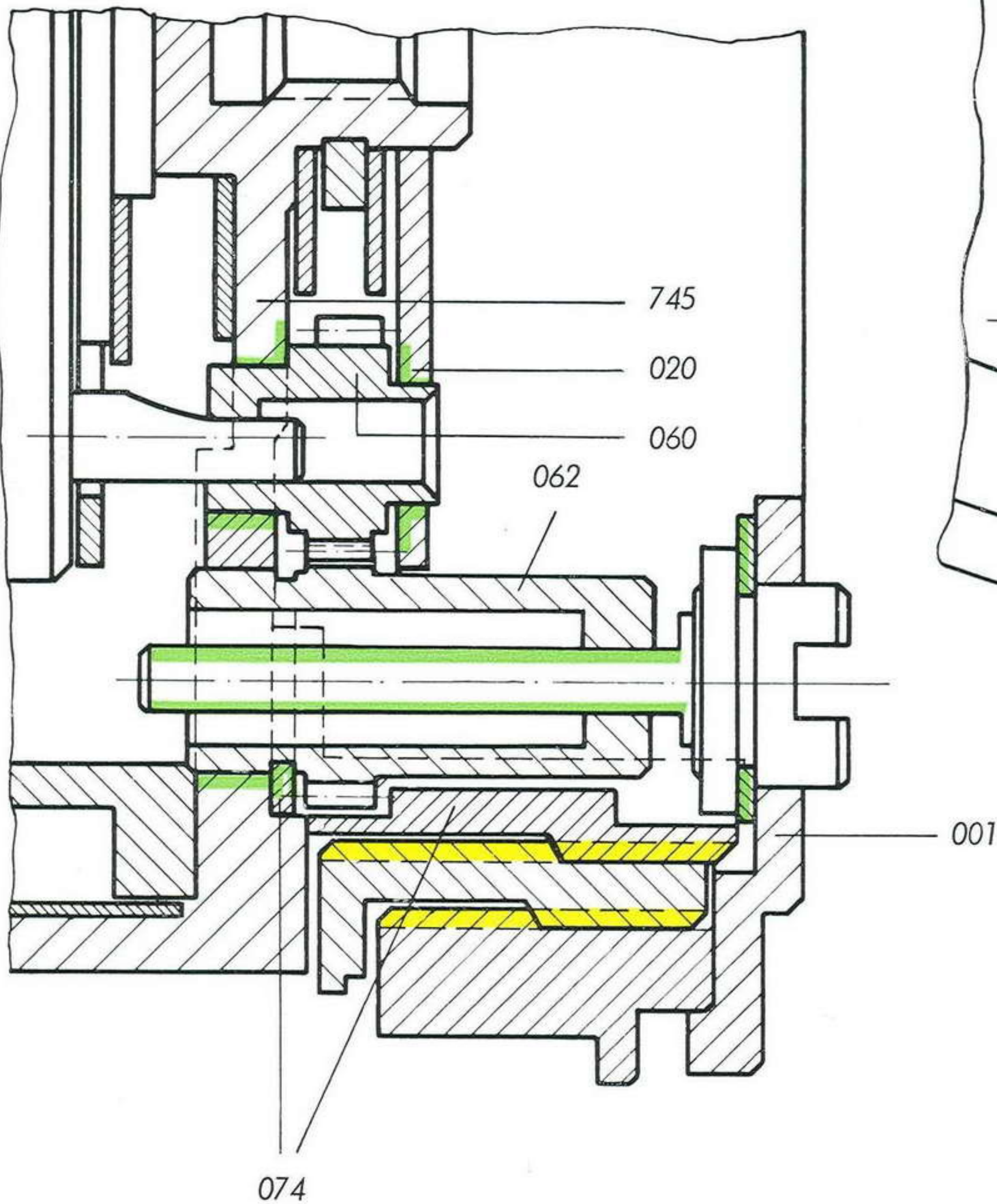
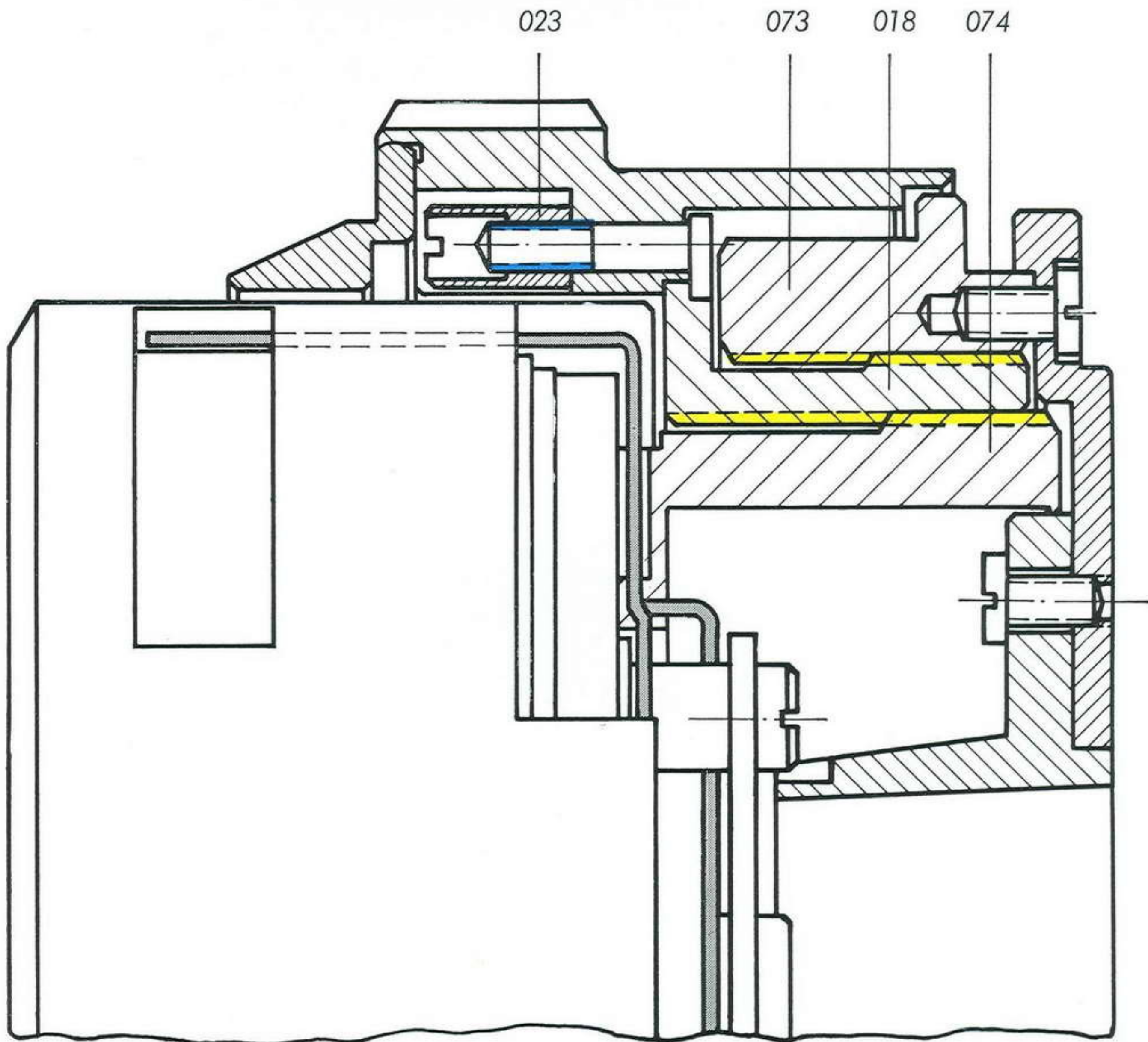


Schmierstoff A  Lubricant A
Schmierstoff C  Lubricant C



SYNCHRO-COMPUR
Schmierplan - Lubrication Schedule

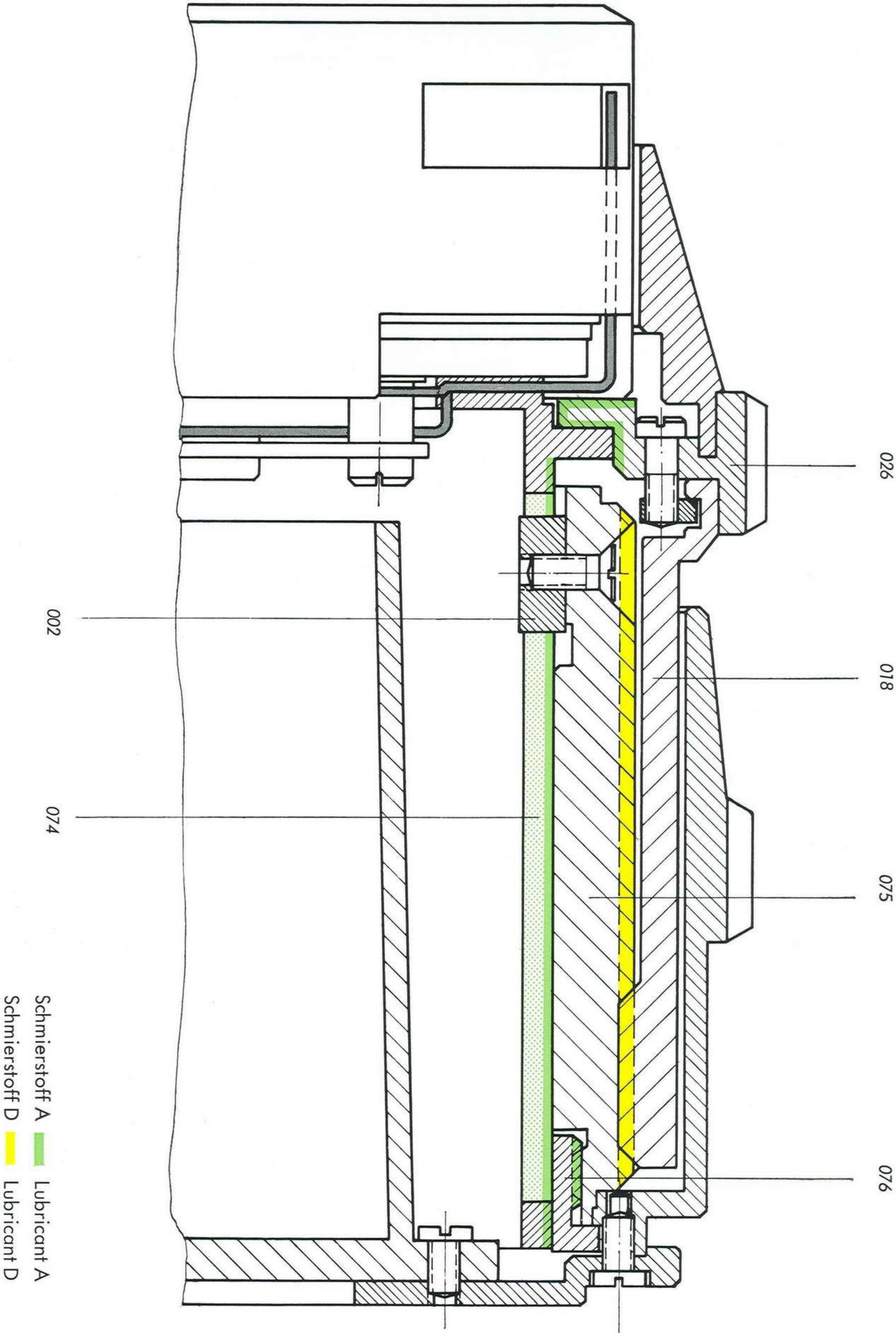
CN-1210-040



- Schmierstoff A Lubricant A
- Schmierstoff C Lubricant C
- Schmierstoff D Lubricant D

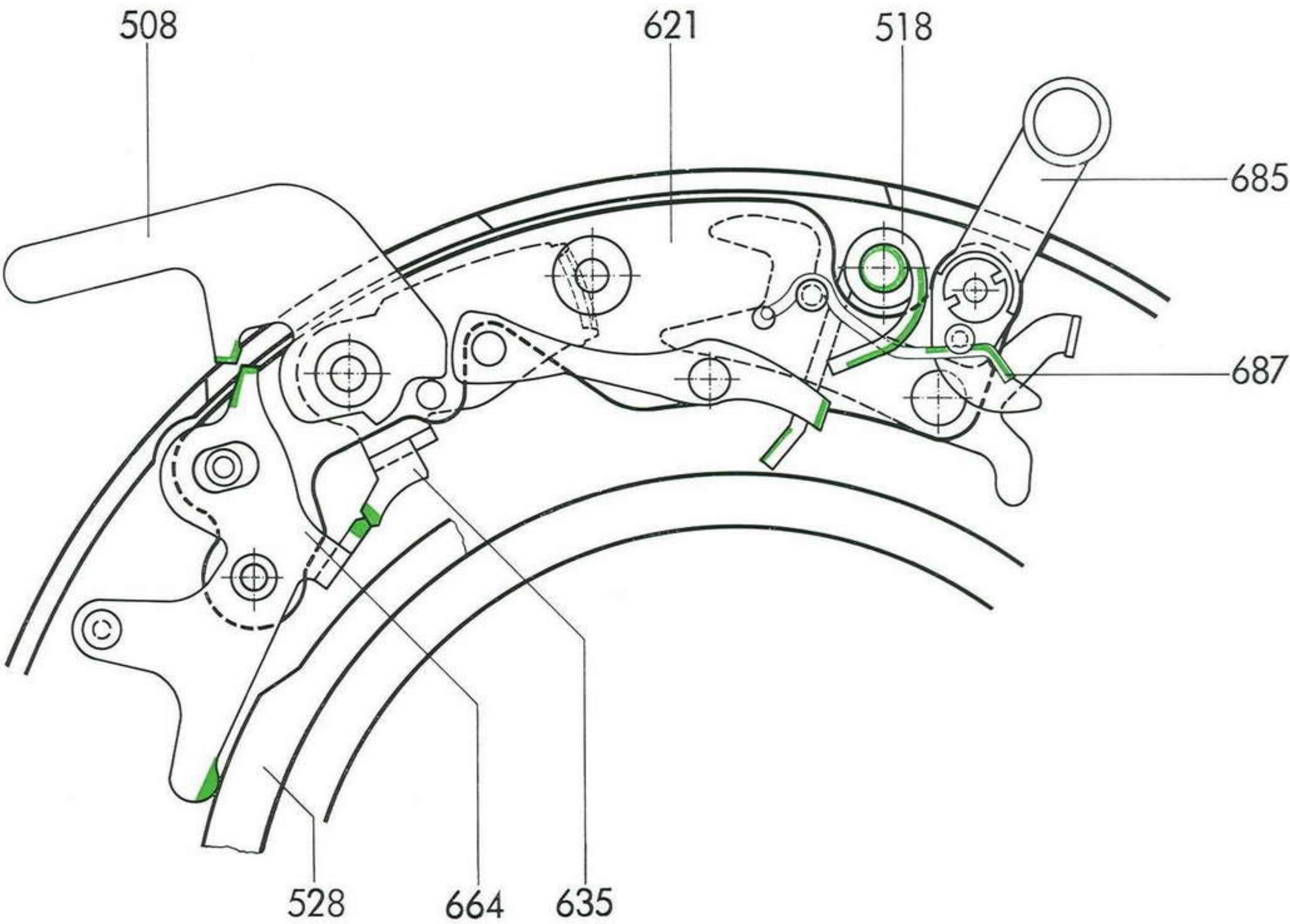
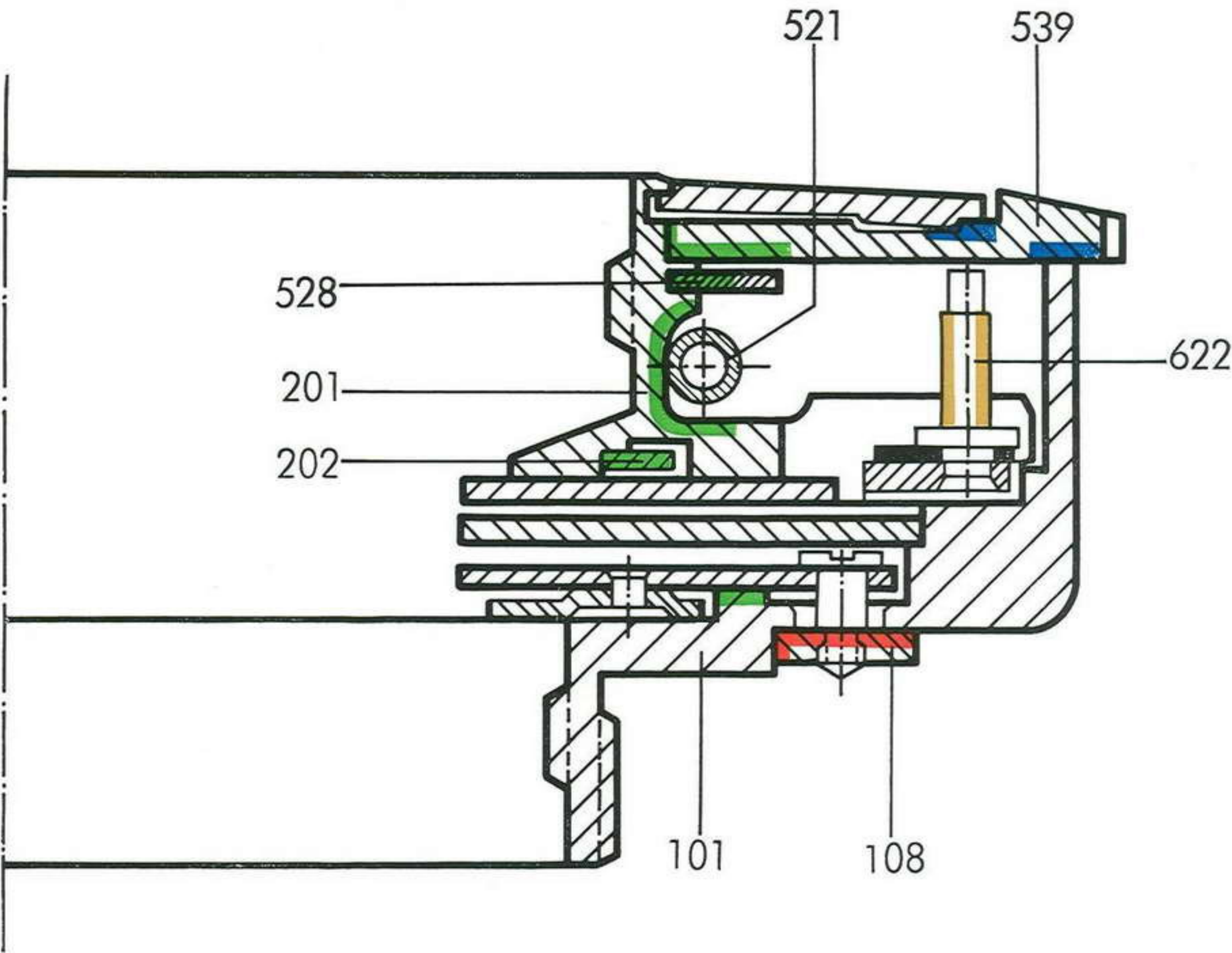
CN-1210-041
CN-1210-042

SYNCHRO-COMPUR
Schmierplan — Lubrication Schedule



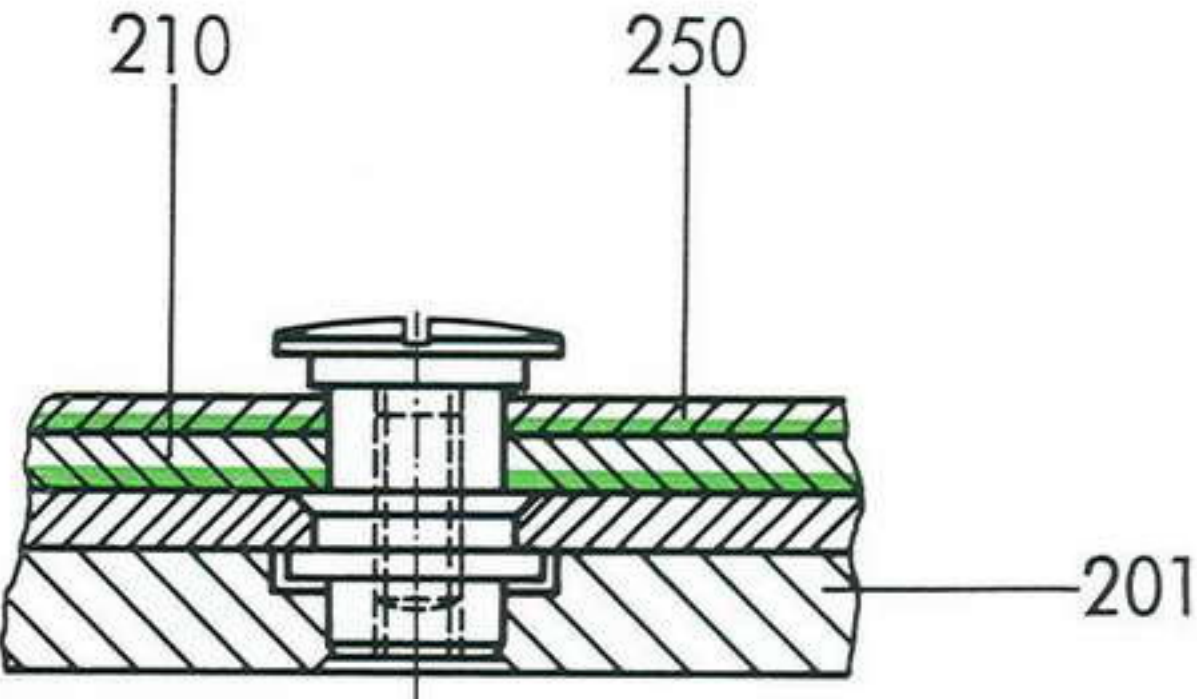
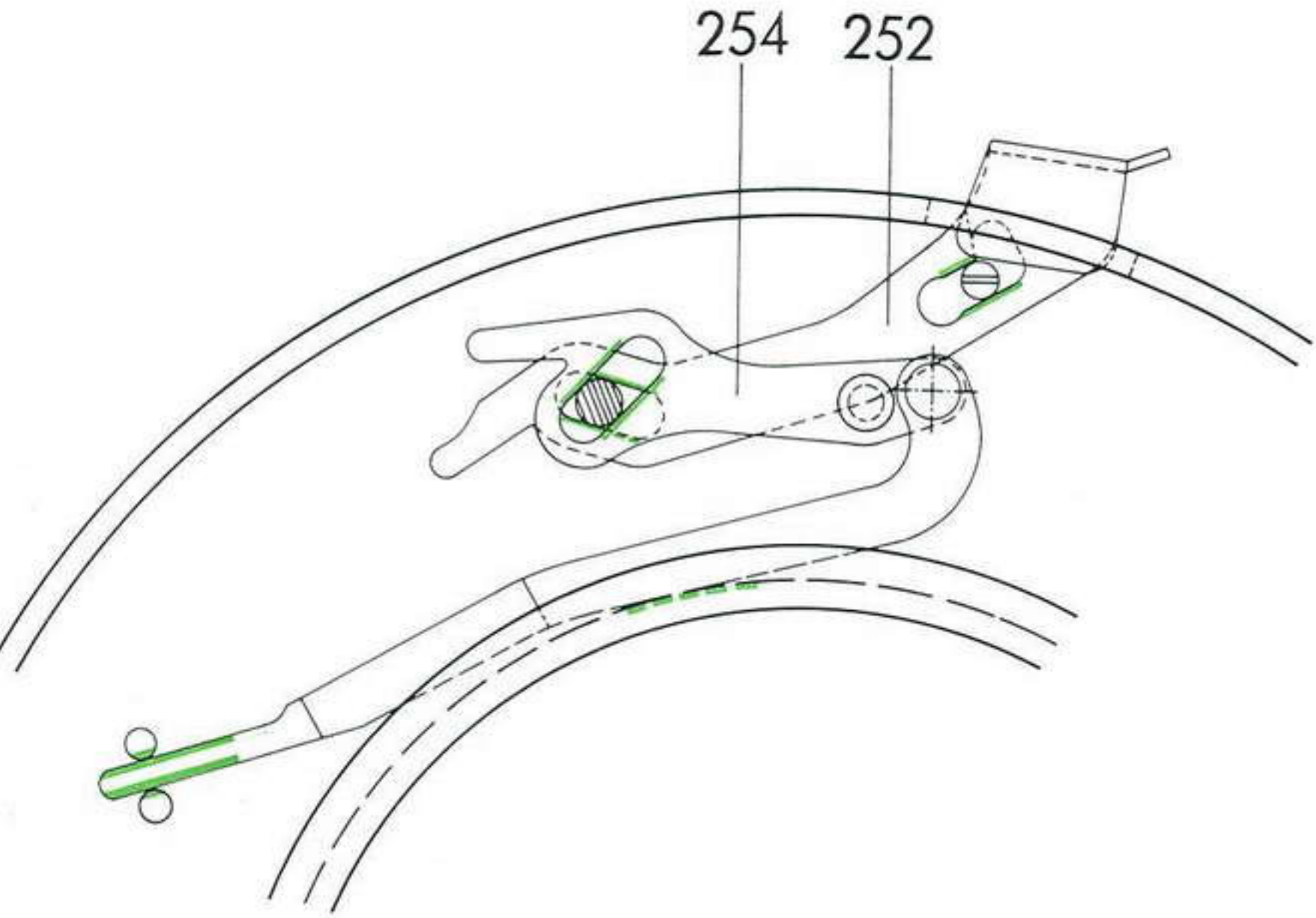
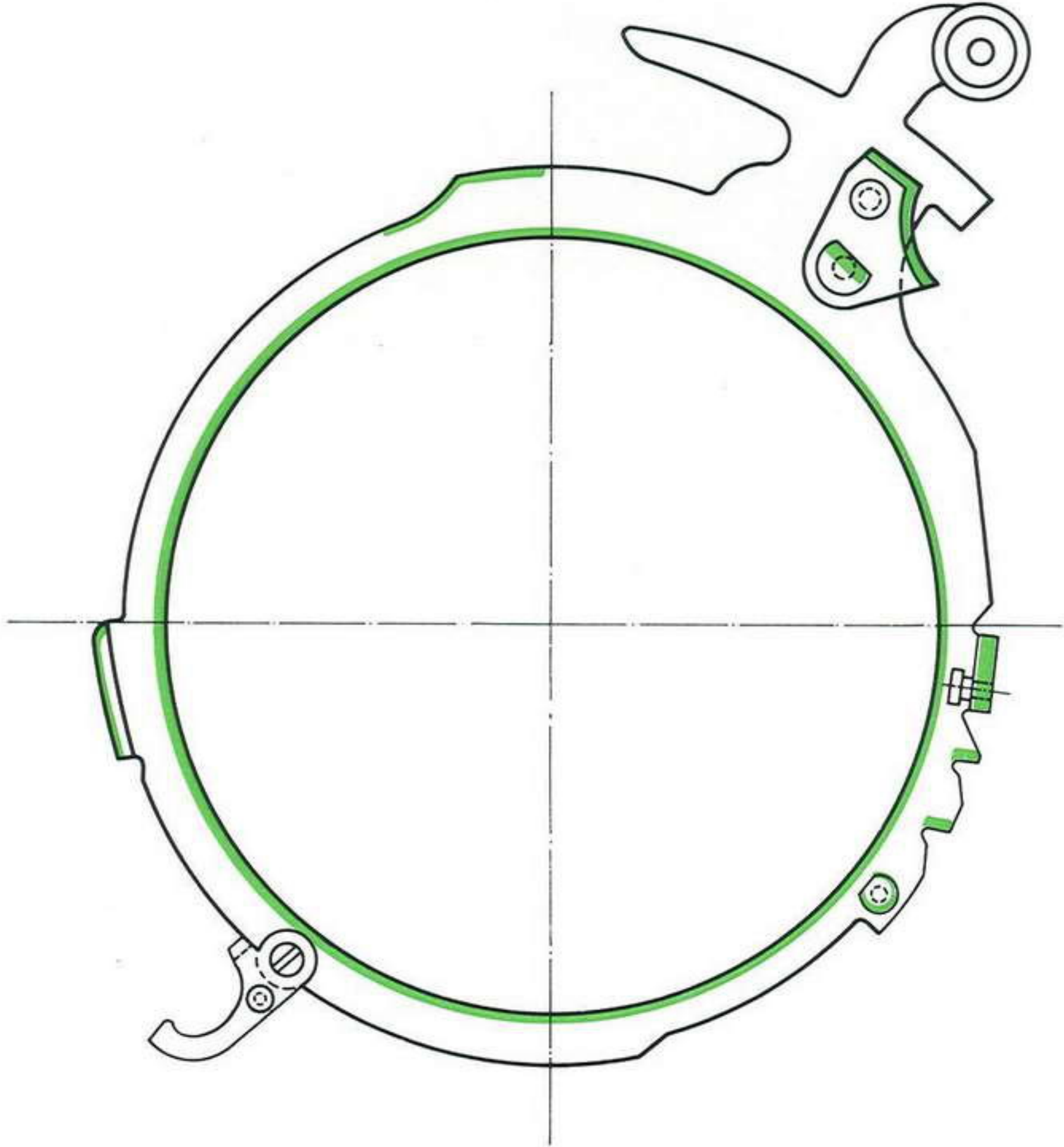
SYNCHRO-COMPUR
Schmierplan — Lubrication Schedule

CN-1307-000



- Schmierstoff A █ Lubricant A
- Schmierstoff B █ Lubricant B
- Schmierstoff C █ Lubricant C
- Öl E █ Oil E

Spannring
tensioning ring 528

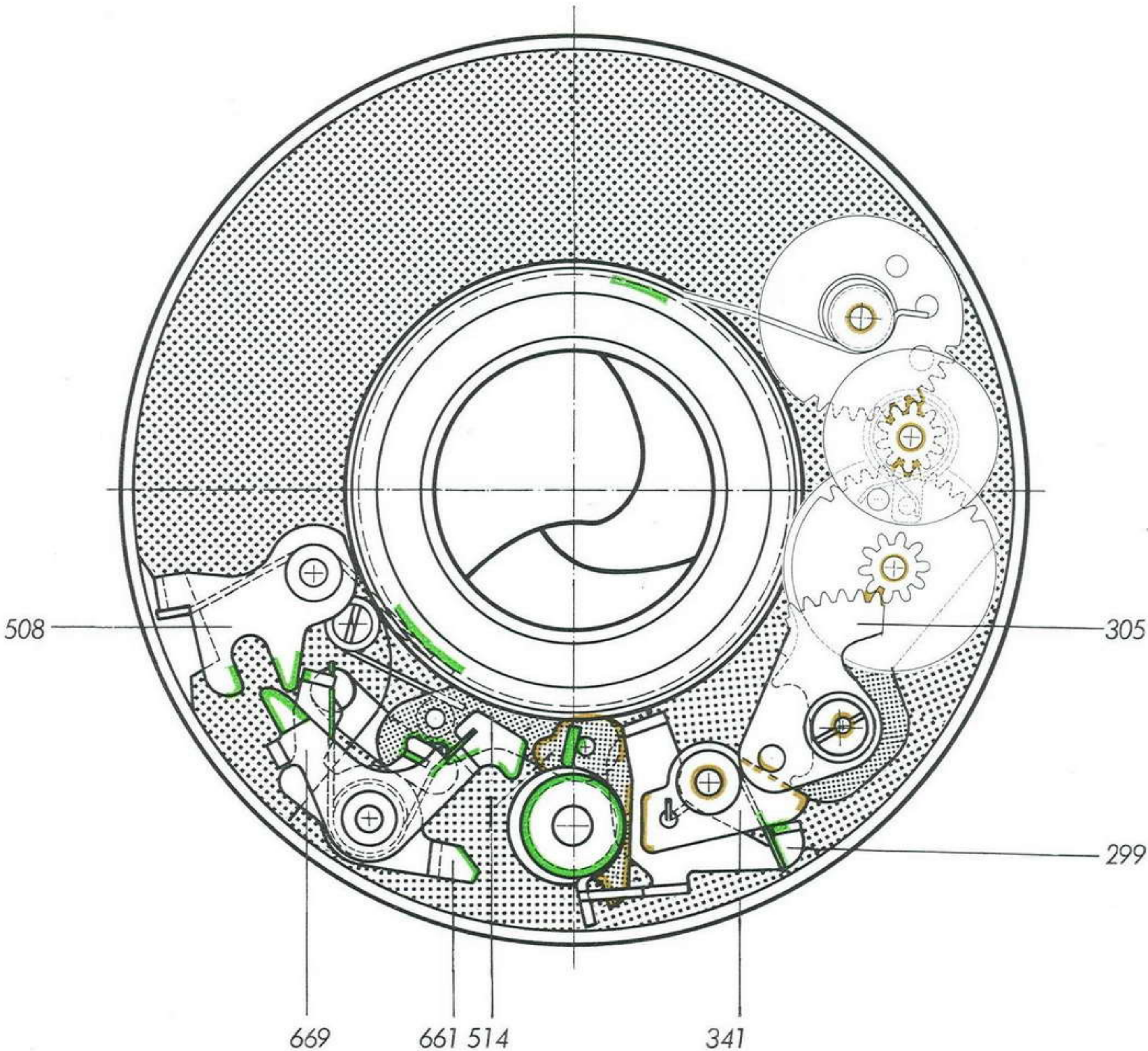


Schmierstoff A  Lubricant A

COMPUR

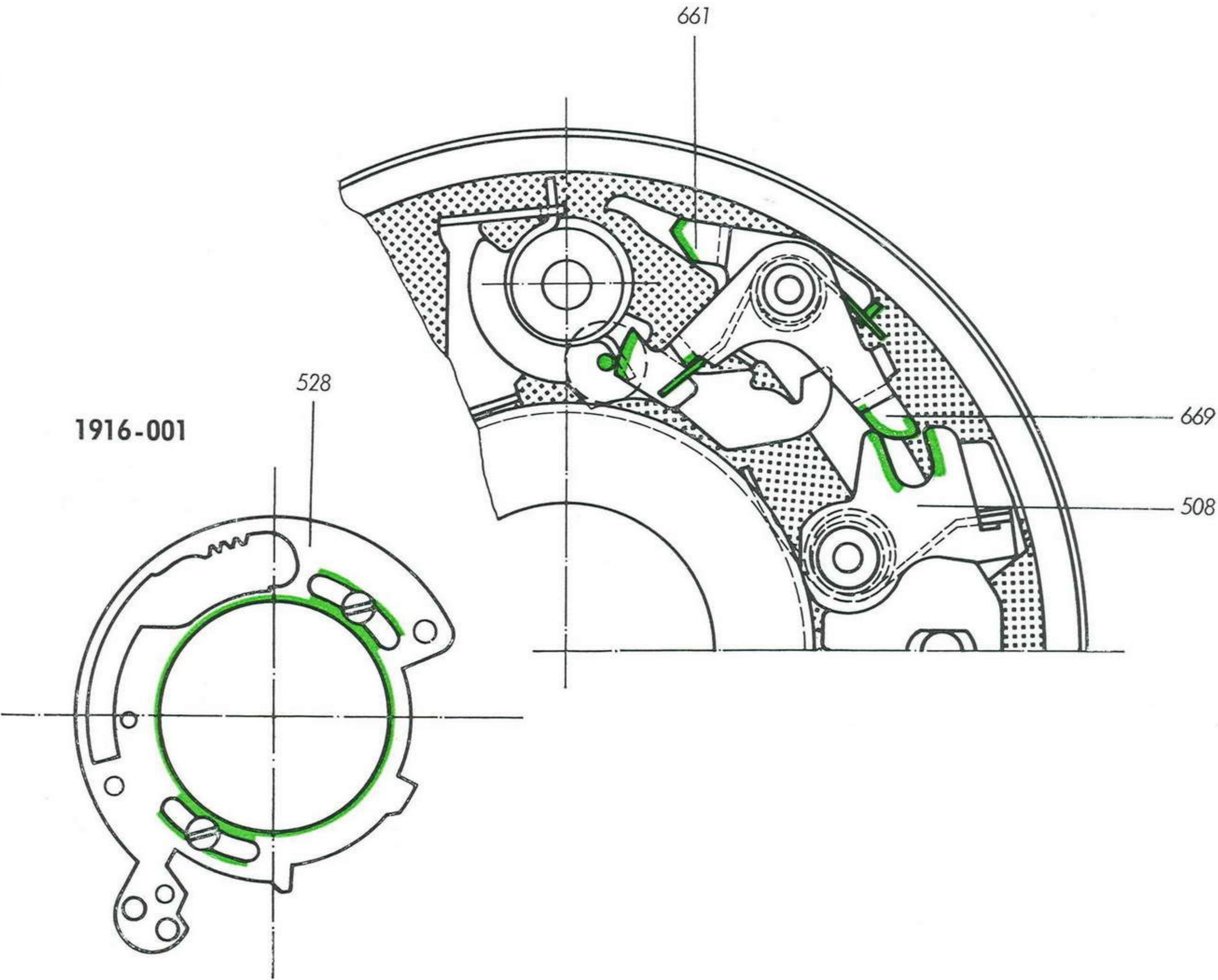
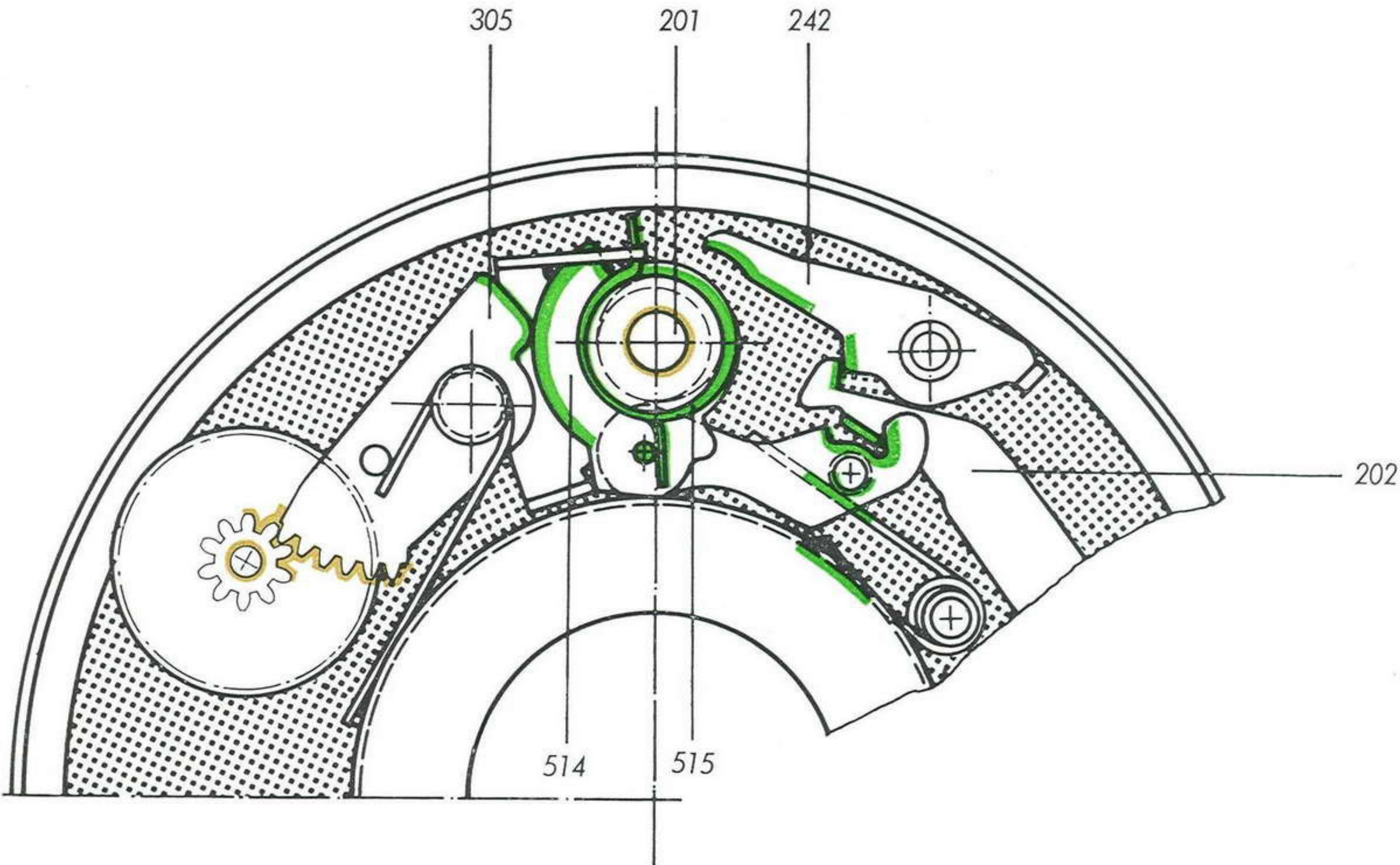
Schmierplan - Lubrication Schedule

CN-1914-000



Schmierstoff A Lubricant A

Oil E Oil E

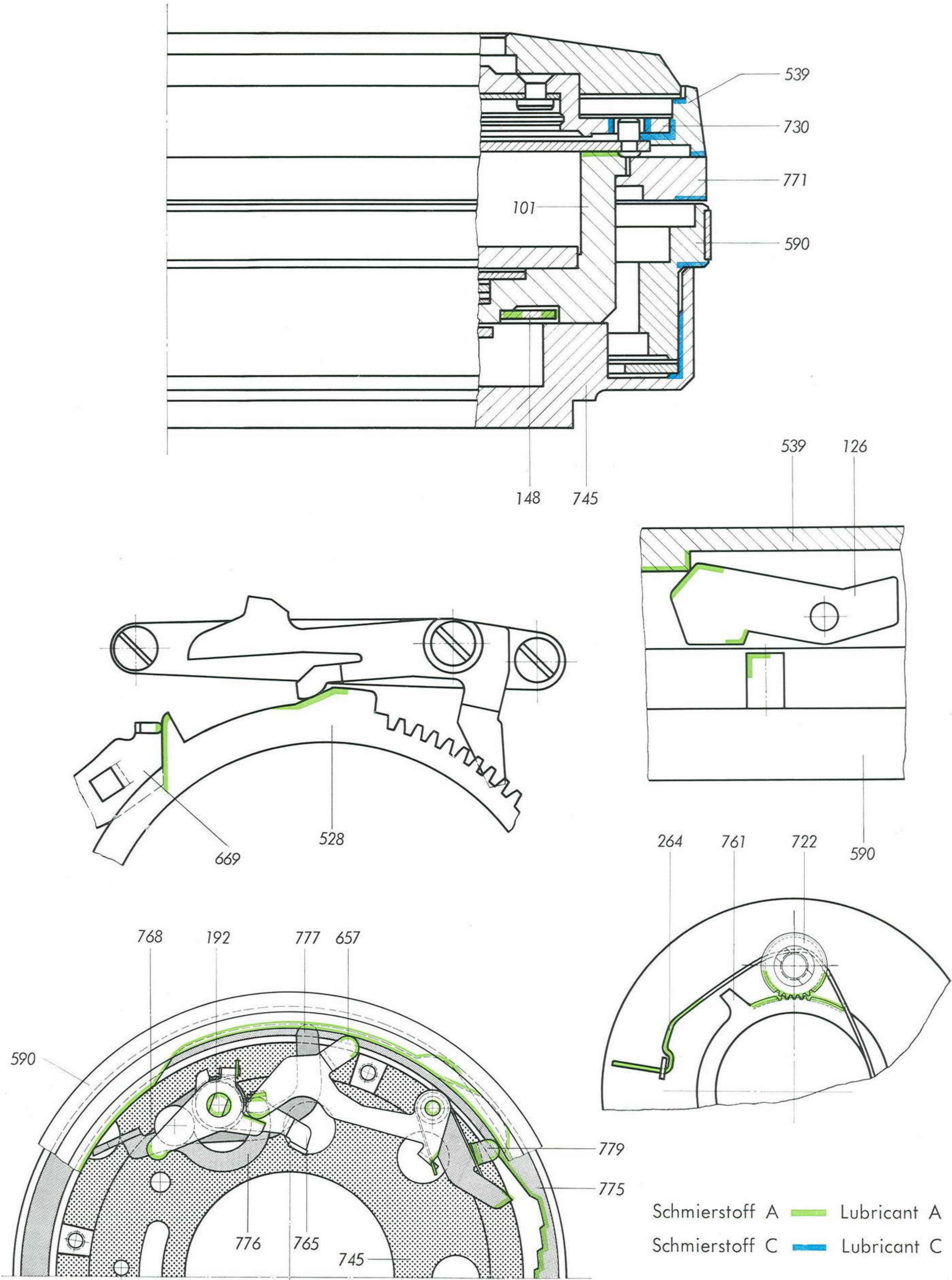


Schmierstoff A Lubricant A
Oil E Oil E

SYNCHRO-COMPUR 00-MXV
Schmierplan - Lubrication Schedule
Spezialverschluß für Firma Zeiss Ikon AG, Stuttgart

CS-1110-556

Ergänzend hierzu Schmierplan 1110-000 u. 1110-024
See supplementary Lubrication Schedule 1110-000 and 1110-024

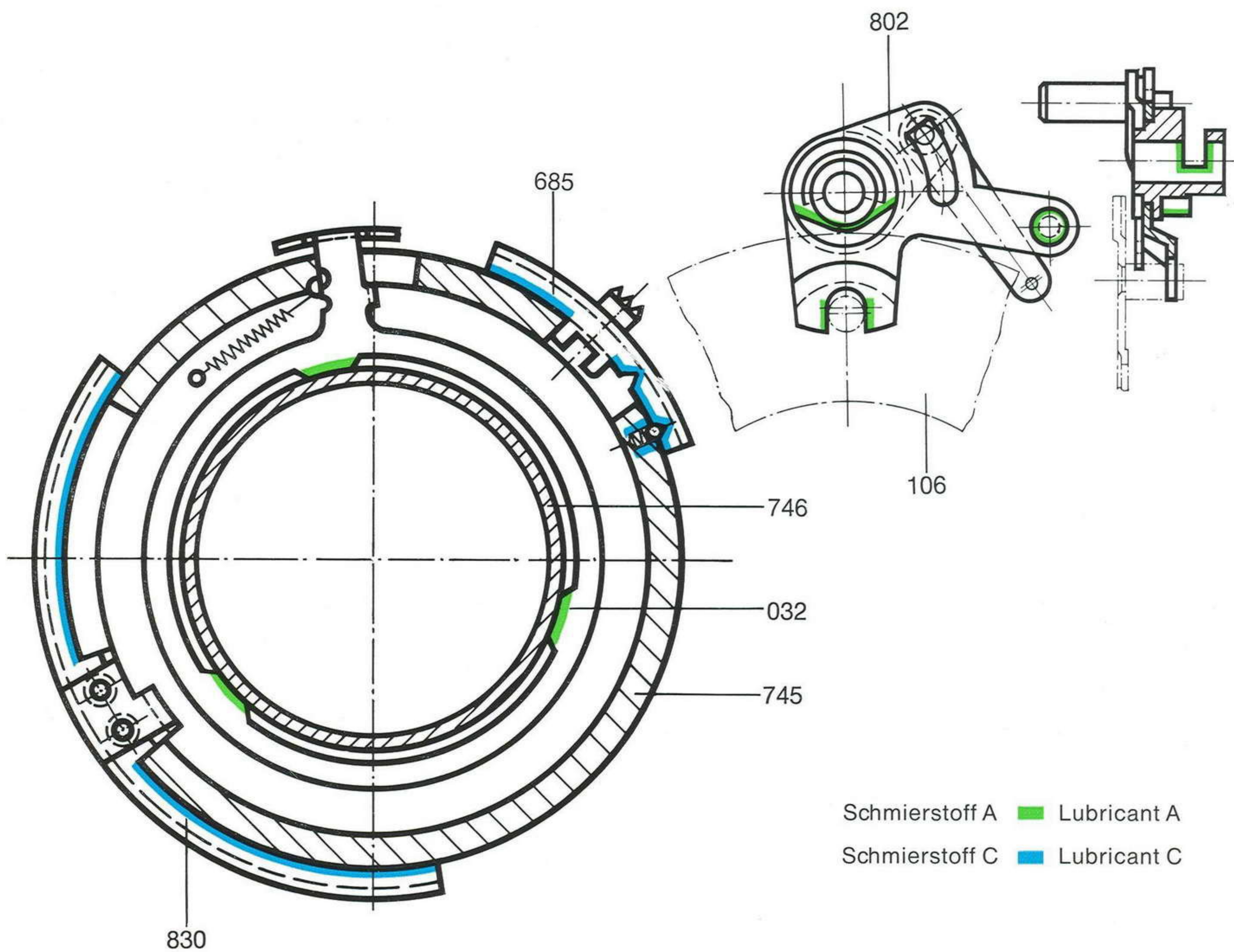
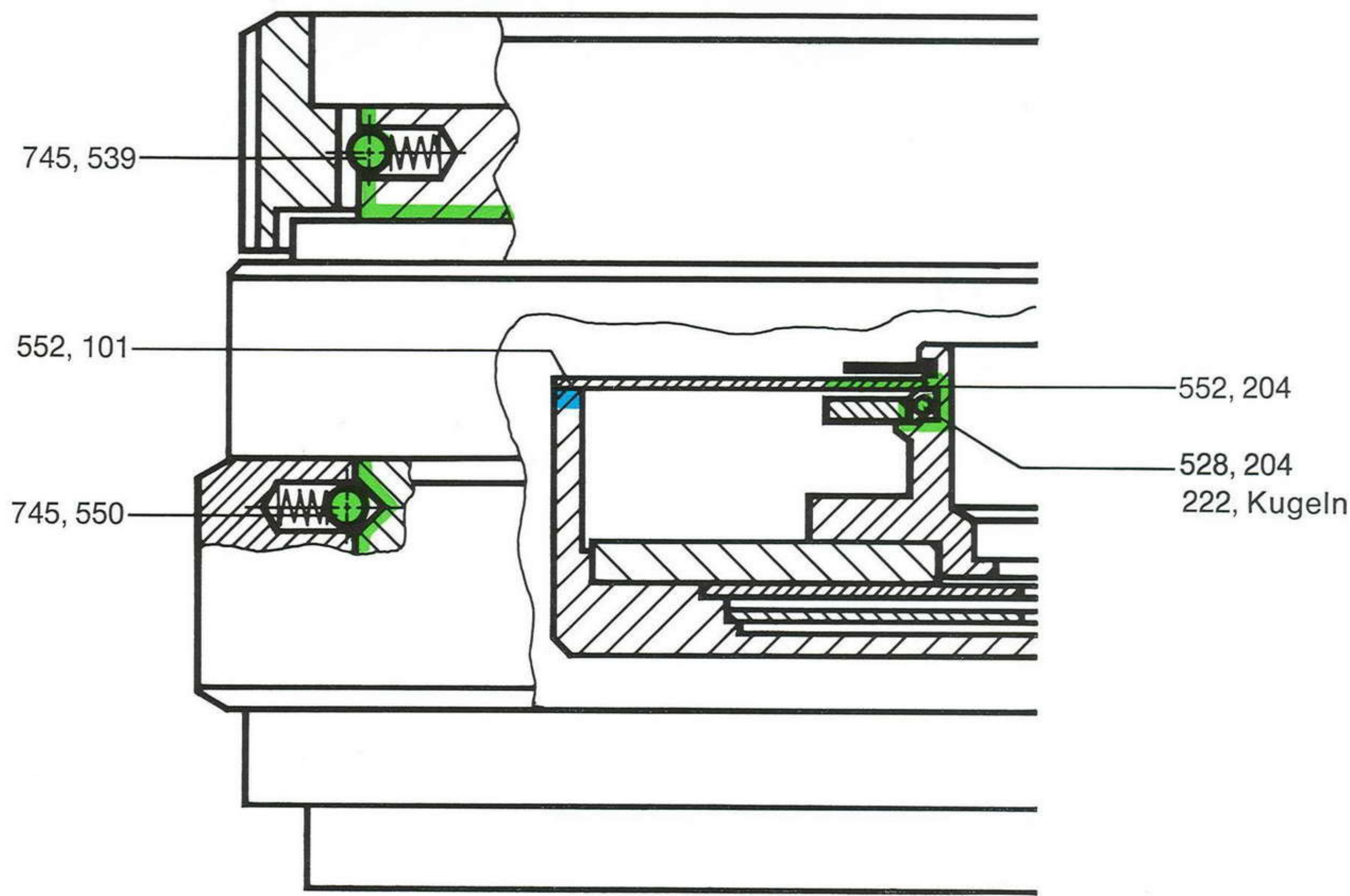


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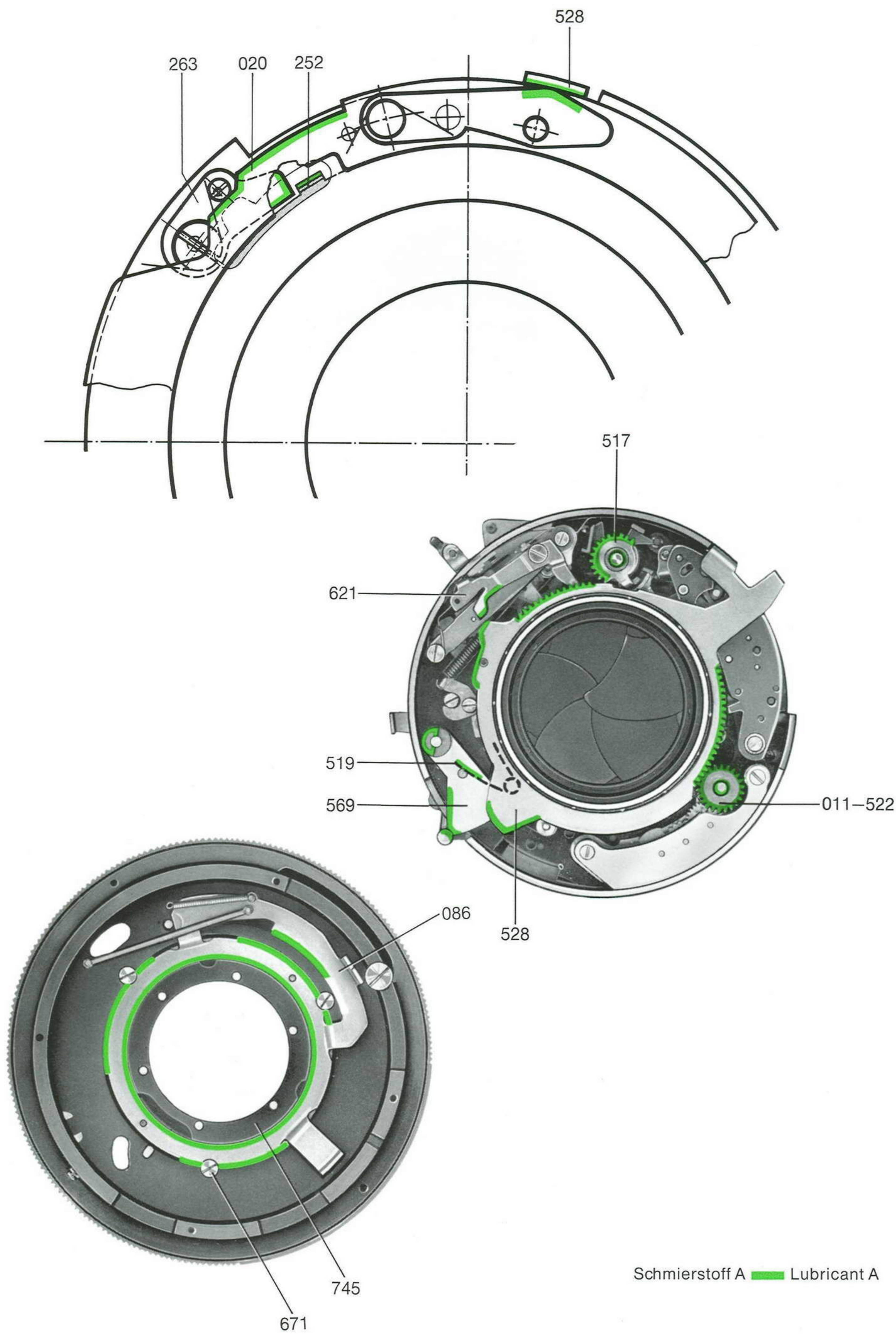
Schmierplan – Lubrication Schedule

Spezialverschluß für Firma Rollei-Werke, Braunschweig
Special shutter for Messrs. Rollei-Werke, Braunschweig

CS-1210-277



Schmierstoff A Lubricant A
Schmierstoff C Lubricant C



Schmierstoff A  Lubricant A

COMPUR-WERK MÜNCHEN

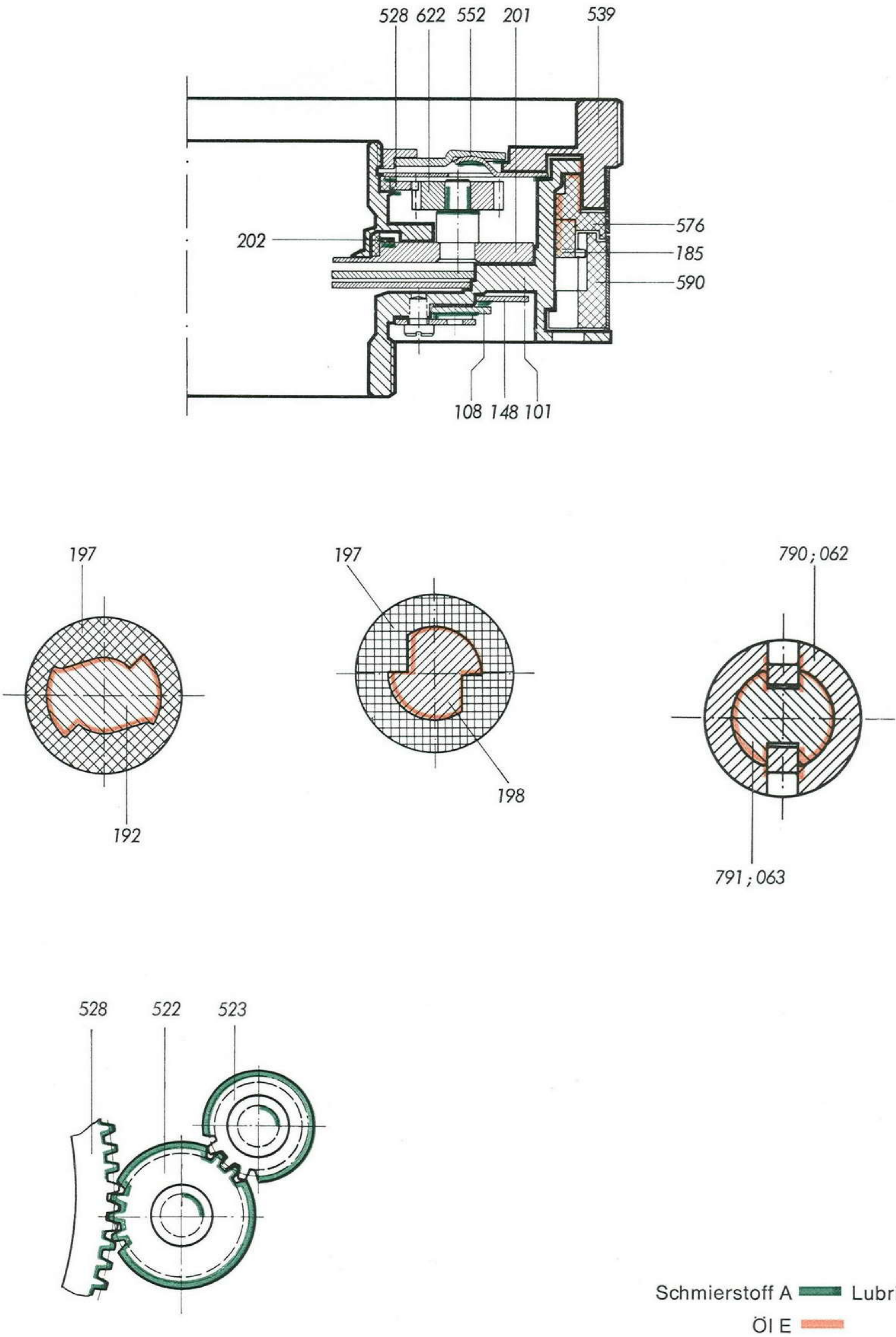
Schmierstoff A  Lubricant A

SYNCHRO-COMPUR
Schmierplan – Lubrication Schedule
Spezialverschluß für Firma Linhof München

CS-1210-604

Ergänzend hierzu Schmierplan 1110-000

See supplementary Lubrication Schedule 1110-000

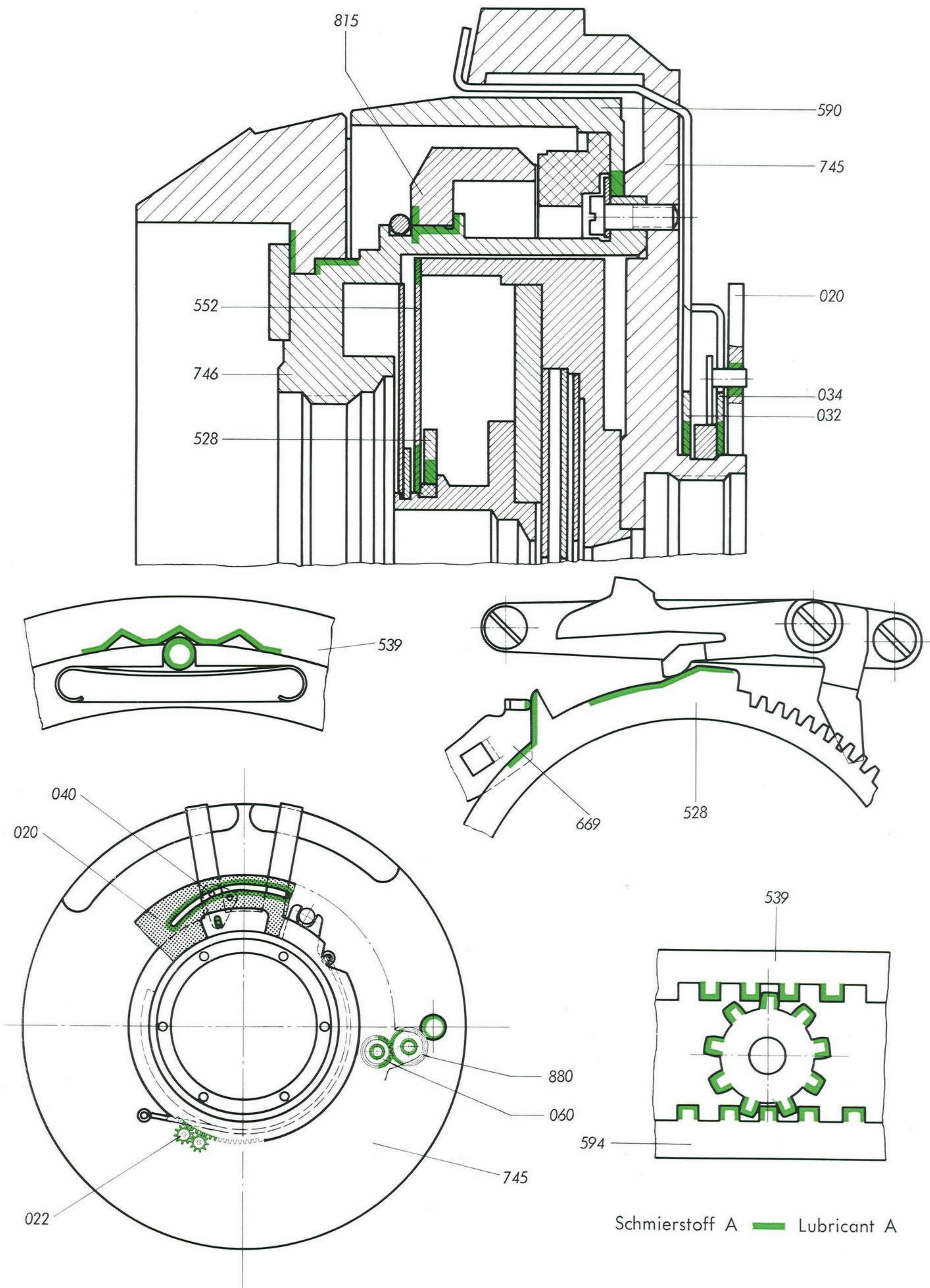


SYNCHRO-COMPUR 0-MXV Spezial
Schmierplan - Lubrication Schedule
Spezialverschlüsse für Firma Linhof, München

1210-671

Ergänzend hierzu Schmierplan 1110-000

See supplementary Lubrication Schedule 1110-000

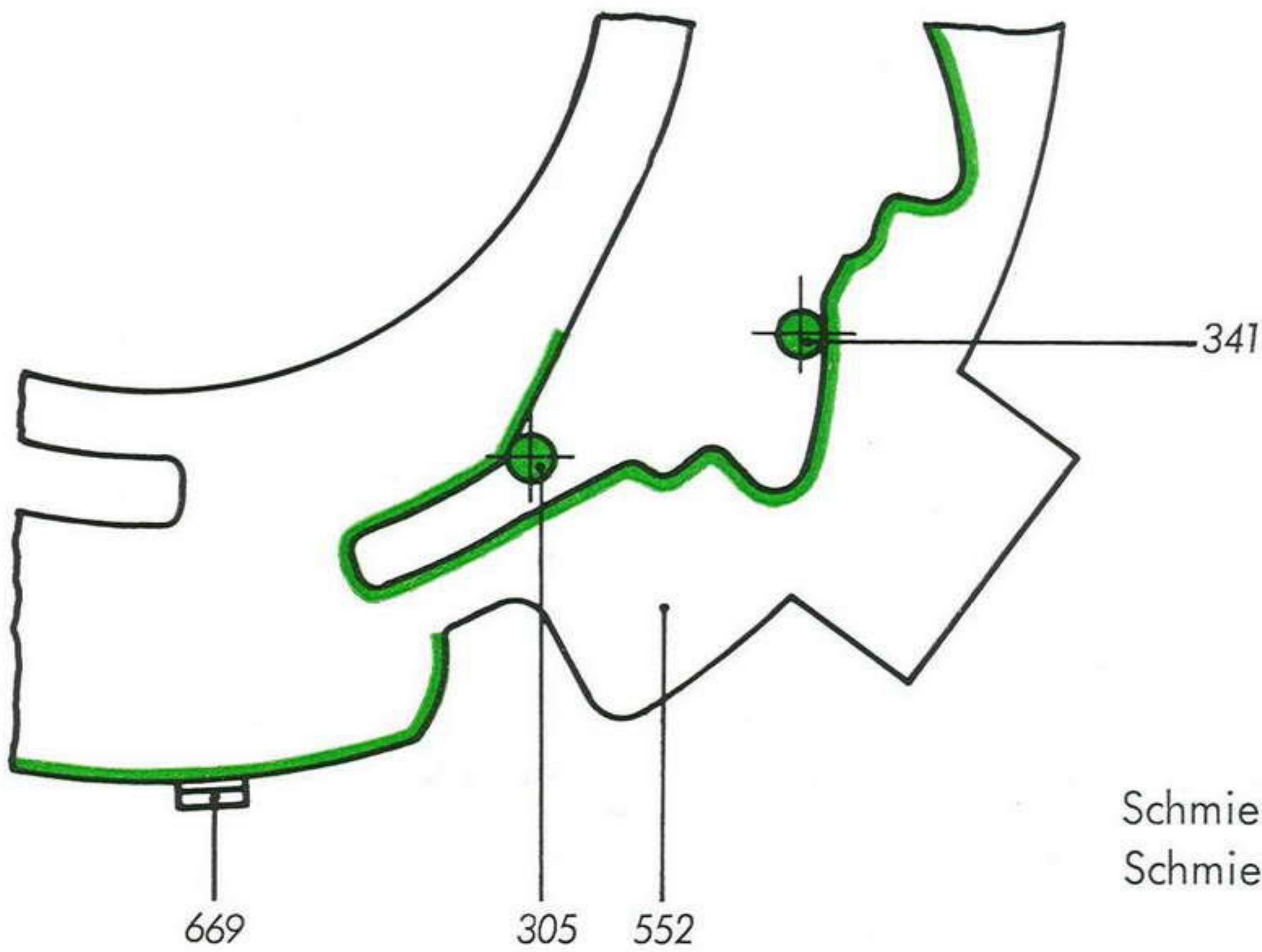
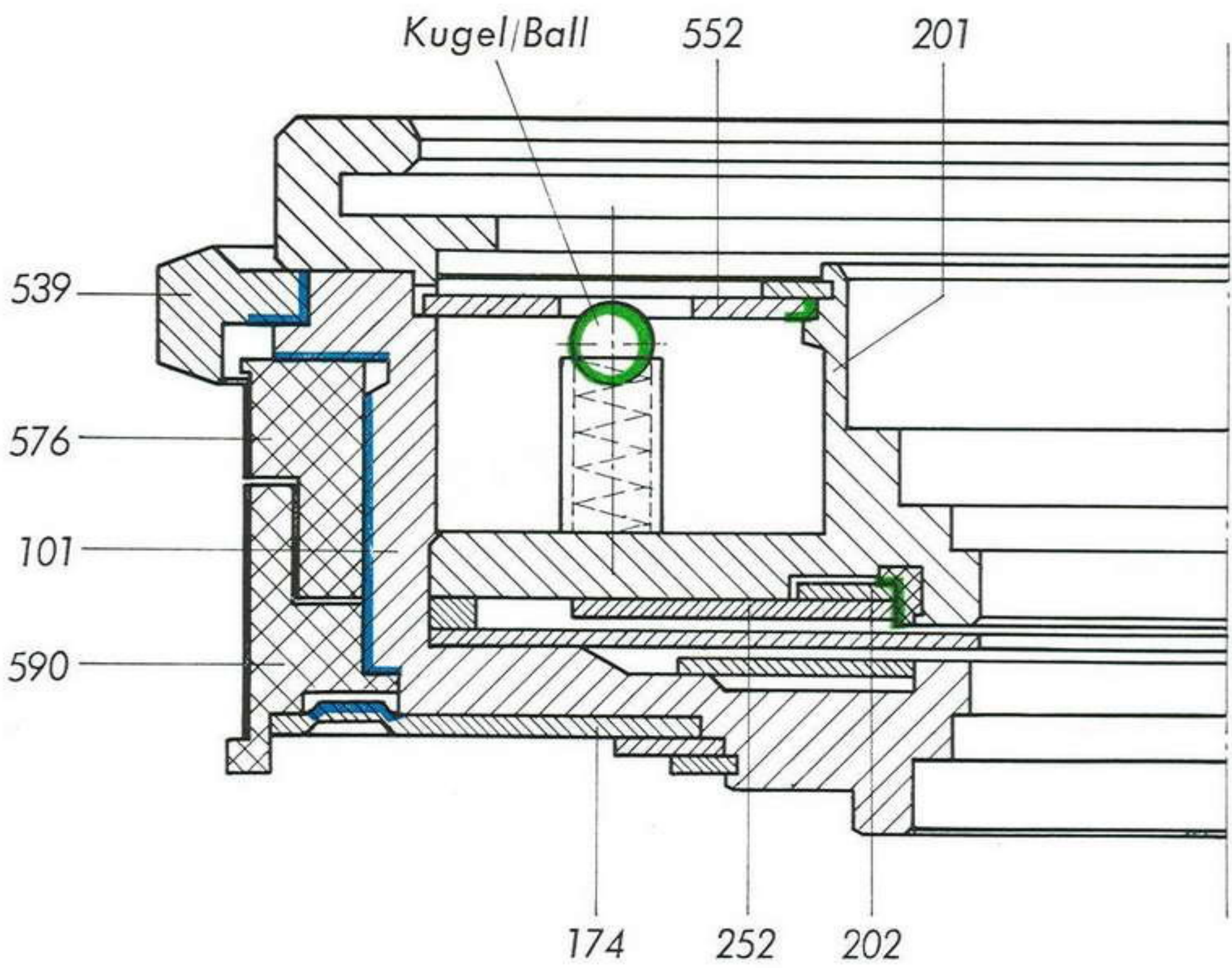


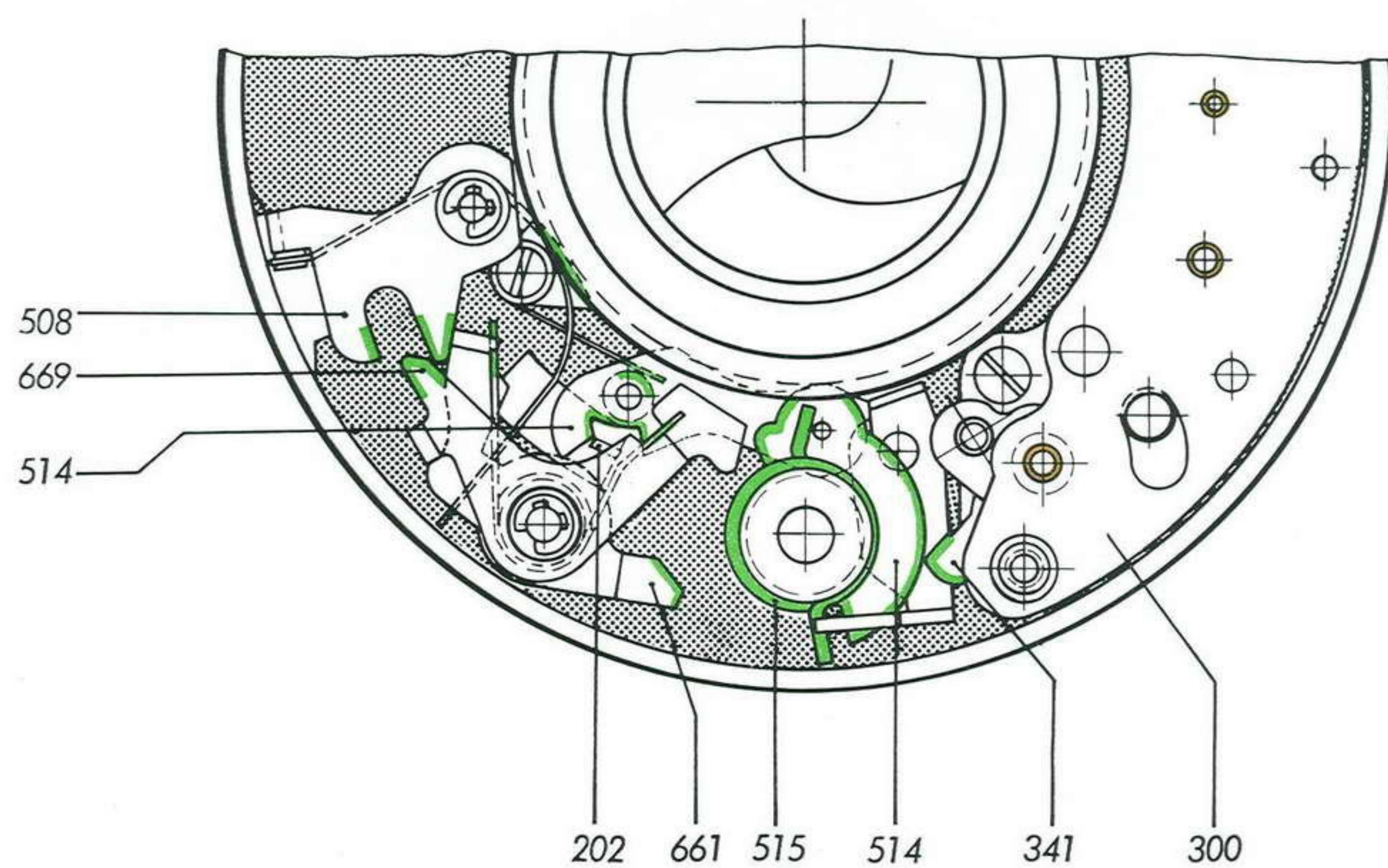
COMPUR 000-X

Schmierplan — Lubrication Schedule

Spezialverschluß für Firma Rollei-Werke; Braunschweig

CS-1912-206





Compur Shutter Repair Manual

Section 13

Supplement (spare parts)

SPARE PARTS LIST
Supplement

Sheet 1

- ① The stock number given in the parts list applies only to a diaphragm system having 5 segments. In the 10-segment system, the undermentioned parts are of different design, the respective stock numbers being listed in the table below.

Stock Number	Description	Qty	Illustration	
			Plate	No.
1110 10 000 105 82	Diaphragm segment	10	CN-1110-000/8	105
1110 10 000 106 82	Diaphragm cover	1	CN-1110-000/8	105
1110 30 000 107 81	Diaphragm ring screw	2	—	—
② 1110 10 000 116 80	Blade cover	1	CN-1110-000/8	116
1110 30 000 120 81	Diaphragm ring guide screw	1	CN-1110-000/8	120
	Diaphragm ring	1	CN-1110-000/8	108

The stock number of the blade ring is independent of the number of the special-type shutter.

For Special-Type Shutter	Diaphragm Ring No.	For Special-Type Shutter	Diaphragm Ring No.
CS-1110-126	1110 50 126 108 81	CS-1110-342	1110 50 340 108 81
CS-1110-129	1110 50 129 108 81	CS-1110-343	1110 50 338 108 81
CS-1110-130	1110 50 130 108 81	CS-1110-439	1110 50 439 108 80
CS-1110-230	1110 50 230 108 80	CS-1110-440	1110 50 440 108 80
CS-1110-231	1110 50 231 108 80	CS-1110-441	1110 50 441 108 80
CS-1112-341	1112 50 341 108 81	CS-1110-543	1110 50 543 108 81
CS-1110-337	1110 50 337 108 81	CS-1110-544	1110 50 544 108 81
CS-1110-338	1110 50 338 108 81	CS-1110-548	1110 50 548 108 81
CS-1110-340	1110 50 340 108 81		

- ② For special shutter CS-1110-543 with 10 diaphragm segments, use blade cover 1110 10 005 116 80.
- ③ When tensioning rings are ordered, the rings will be furnished with the spring mounted in position.
- ④ See repair instructions for differences in design and correct sequence of inserting blades.
- ⑤ The following three different diaphragm rings are available for special-type shutter CS 1110-230:

Diaphragm Ring Number	Number of Diaphragm Segments in Diaphragm System	Angle between Arm of Diaphragm Ring and Driving Slot	Remarks
1110 50 230 108 80	10	—	see Supplement ①
1110 50 230 108 81	5	87° 50'	
1110 50 230 108 82	5	83°	Listed in Spare Parts List

- a) for Rolleiflex 3.5, serial numbers 1282000-1298999 and 1401000-1427999
- b) for Rolleiflex 3.5, serial numbers 1740000-1787999 and Rolleiflex 3.5 E2, serial numbers 1870000-1871999 and 2480000-2481999.

- ⑥ For shutters with 90° speed selector ring knob use
- | | |
|------------------|--------------------|
| f-stop indicator | 1110 10 338 114 80 |
| with 1 screw | 1110 30 130 113 80 |

- ⑦ For shutters in which the setting ring is knurled at 60°, the stock numbers given in the parts list are applicable.
Where the setting ring is knurled at 90°, use setting rings and cover plates as per following table.

For Special-Type Shutter	Exposure Control Ring No.	Cover Plate No.
CS-1110-337	1110 30 340 539 82	1110 10 337 540 82
CS-1110-338	1110 30 338 539 83	1110 30 338 540 83
CS-1110-340	1110 30 340 539 82	1110 30 337 540 82
CS-1110-342	1110 30 340 539 82	1110 30 342 540 81
CS-1110-343	1110 30 338 539 83	1110 30 343 540 81

The setting rings listed in the above table have an 18° chamfer; the cover plate extends into the setting ring.
Setting rings with a 7° chamfer and matching cover plates will not be supplied. Where it is necessary to exchange one of the two parts, the matching part will also have to be exchanged.

⑧

When ordering	be sure also to order	
1110 20 000 421 81	1110 40 000 670 83	Bush for shutter speed and "V" detent lever
1110 20 011 421 80		
1210 20 000 421 80		
1110 40 000 627 81	1110 40 000 628 83	Anchor shaft
	1207 40 000 630 82	Thrust washer
1110 20 000 664 81	1110 40 000 699 84	Pivot for M-detent lock
1210 20 000 664 81	1210 40 000 699 80	
1110 40 000 696 91	1110 40 000 695 84	M-detent washer
1110 40 030 696 81		
1210 40 000 696 80		

See Item 9 of Repair Instructions

- ⑨ For shutters having 10 diaphragm segments, use 1110 10 544 114 81 with screw 1110 30 130 113 81.
- ⑩ Setting ring spring forms a unit with shutter speed lever spring. Instead of 1110 30 000 151 83 and 1110 30 000 673 82, use only 1110 30000 673 83.
See Plate 1110-030/1.
- ⑪ The parts listed in the parts list have been discontinued; they had been intended for shutters with f-stops 2-16.
Where necessary, the following matching parts should be exchanged:
1110 50 140 108 81, 1110 10 010 163 82, 1110 10 140 590 81.
In shutters already having f-stops 2-22, the foregoing parts may be exchanged individually.
- ⑫ For shutters having an MX setting ring lock, the following parts are required:
1110 10 030 174 80 and 1110 10 030 730 83. (Spring: 1110 40 030 749 80)
- ⑬ For the stop use screw 1110 30 000 260 81. (Screw has been given a greater length and must under no circumstances be used to attach the mounting tube.)
- ⑭ Instead of 1110 30 000 151 83, now use 1110 30 011 151 83.
- ⑮ Instead of 1110 30 030 673 81, now use 1110 30 000 673 83.
- ⑯ For the rear threaded union, the shutter mount and sleeve, the stock numbers given in the parts list are applicable.
Where screwing is performed from the cover plate side, use the following parts:
1110 10 020 745 82 (for special model 1110-545, use 1110 10 545 745 82)
1110 10 020 746 84 and 4 screws 1110 30 020 055 80.

SPARE PARTS LIST**Supplement****Sheet 2**

- ⑰ For special-type shutter CS-1112-141 without tensioning ring, use release 1112 10 141 508 80 instead of 1112 10 134 508 80;
instead of tensioning pinion 1112 10 135 517 80, use tensioning wheel 1112 10 141 517 80.

- ⑱ The diaphragm closing spring has been modified; it now has one outwardly and one inwardly projecting anchoring eye each.
Stock No.: 1110 30 011 170 82.

The coils of the blade opening ring spring have been modified.
Stock No.: 1110 30 011 264 83.

Where the last-mentioned spring has to be replaced, the diaphragm closing spring must be of the type described above; otherwise the latter will also have to be replaced.

- ⑲ Two different styles of tensioning ring springs are available for both size 0 and 00 shutters. The differences between these springs are indicated in the table below.

Shutter Size	* Distance	Stock No.
00	9.0	1110 40 000 521 81
	8.3	1110 40 000 521 82
0	10.3	1210 40 000 521 80
	8.3	1210 40 000 521 81

* This can be measured on the tensioning ring and is the distance between the spring anchoring pin and the nearest gap between tensioning teeth.

- ⑳ Where either the bayonet ring 001 or the rangefinder control cam 005 has to be renewed, it is necessary to replace the entire assembly 001 (bayonet ring) with a rangefinder having a matching cam apex. Therefore, the rangefinder control cam is not supplied separately.
- ㉑ The mount 008 is available as a complete sub-assembly only, i. e., including the helical focusing nut and the built-in diaphragm. Screws threads front and rear in mount machined to match lens seating.
- ㉒ When ordering and assembling spare parts, please consult repair instructions applicable to the shutter type concerned.
- ㉓ The locking lever mounted on the bridge must be adjusted while in position in the shutter (see repair instructions).
- ㉔ Use blade opening ring 1210 10 011 252 81 if in the base plate the stop for the blade ring pin in the closed position is bare metal (no surface finish).

- ②⑤ Use countersunk screws 1110 30 806 048 80 if bayonet ring is found to be so attached to mount body.

Only in the case of style B quick-change lens mounts as shown in data sheet 2, where cheese head screws are used to attach the bayonet ring to the mount body, will it be necessary to use additionally a tapered pin 1110 30 807 054 80. Refer to repair instructions if the bayonet ring and mount body have to be replaced.

- ②⑥ To check the tensioning and release functions of the special-type shutter CS-1210-670, gauge LZ 52 1210 702 000 may be used (see page 9 of repair instructions under „tensioning ring 528“). To do this, it is necessary to substitute the adapter ring 080 for the bayonet retaining ring supplied with the gauge.

- ②⑦ When replacing exposure control ring 539 and flanged intermediate ring 815, the cover plate 540 or the outer housing 808 should also be replaced to ensure requisite axial alignment. Refer to repair instructions 1110-025, 1110-026 for alignment procedure.

- ②⑧ For special shutter types CS-1110-238 and CS-1110-239 as well as CS-1110-683 and CS-1110-684, there are 2 types of cover plate fastening:

- a) with threaded ring at the front end of mounting tube. The following parts are to be used:
No. 1110 10 025 540 80 cover plate for CS-1110-683 and CS 1110-684

No. 1110 10 238 540 82 cover plate for CS-1110-238 and CS-1110-239

No. 1110 30 000 547 82 threaded ring

No. 1110 30 000 538 82 retaining screw for threaded ring

- b) with 4 cheese head screws, metric screw thread 1. 4. In this case use:
No. 1110 10 025 540 81 cover plate for CS-1110-683 and CS-1110-684

No. 1110 10 238 540 83 cover plate for CS-1110-238 and CS-1110-239

No. 1210 30 702 004 80 screw

(threaded ring and retaining screw not required).

- ②⑨ When replacing opening disc 801, the directions for adjustment given in repair instructions 1110-035 should be observed.

- ③⑩ When ordering M-cam check lever 696, the washer 1110 40 035 695 80 (check lever base) as well as the M-detent pin 1110 40 035 630 80 (bearing for M-cam check lever) should also be ordered.

- ③⑪ When ordering any components forming part of the bayonet retaining ring assembly, please note that an axial play of 0.03–0.08 mm should exist between the exposure control ring 539 and bayonet retaining ring 730. Adjustment by means of the 3 screws 822 in the bayonet retaining ring. See repair instructions 1110-035, 1110-034.

- ③⑫ On replacing either the exposure control ring 539 or flanged intermediate ring 815, axial play of 0.03–0.08 mm should be ensured. For adjustment see repair instructions 1110-024.

- ③⑬ In the Compur rapid 00-XV shutter without tensioning ring, the setting ring spring 151 is only necessary if a V-coupling with circular anchoring hole of 1.3 mm diam. for the setting ring pin (tensioning pin for selftimer) is provided in the selftimer 400. With V-coupling having a 1.3 x 1.0 mm hole at 90° to the longitudinal axis of the lever, the setting ring spring is unnecessary.—Selftimers having a V-coupling with a 1.3 x 3.8 mm slot coaxial with the lever can be used only for Synchro-Compur 00-MXV shutters.

SPARE PARTS LIST

Supplement

Sheet 3

- ③④ When ordering spare parts for **COMPUR QUICK-CHANGE MOUNTS** in "Synchro-Compur 00-MXV, Wide and Wide-Reflex with Light Value Follow-up System", the following should be noted:

Model and Application of Quick-Change Mount
— see COMPUR DATA SHEET

Sheet 5

Type number of Quick-Change Mount
— see TABLE OF LENSES AND QUICK-CHANGE MOUNTS

CN-1111-850

Please also bear in mind the relevant
SPARE PARTS LISTS

from Type No. CN-1111-851

with cross reference to ILLUSTRATION PLATES

CN-1111-850*)
and CN-1111-800

For **Combination mounts** (e. g., A/1-K)

with rangefinder cam
with preset
spring diaphragm

all parts in the parts lists apply.

For **Reflex camera mounts**

without rangefinder cam
with preset
spring diaphragm

the following parts are not needed:

1111 40 851 003 80 retaining spring
1111 40 806 005 81 rangefinder control cam
1111 40 851 084 81 screws for retaining spring

For **rangefinder camera mounts**

with rangefinder cam
without preset
spring diaphragm

the following part is not needed:

1111 30 851 083 81 preset diaphragm ring

For **standard mounts**

without rangefinder cam
without preset
spring diaphragm

the parts not needed are the same as in the case
of the reflex and rangefinder cameras.

- ③⑤ For models A/1, A/2 und B/1 Quick-Change Mounts without preset spring diaphragm, diaphragm ring spring 1111 30 806 015 80 must be used instead of 1111 30 815 015 81, and diaphragm intermediate ring 1111 10 870 037 80 instead of 1111 10 051 037 81.

③⑥

When ordering bayonet rings the following details should invariably be given:

Lens type, model of Quick-Change Mount (see table of lenses and Quick-Change Mounts 1111-850) and **camera manufacturer**.

In Quick-Change Mounts with rangefinder cams, when replacing bayonet ring 001 or rangefinder control ring 005, the entire bayonet ring assembly with matching cam apex height of rangefinder control cam should be ordered. Consequently, for these quick-change mounts the rangefinder control ring is not listed as an individual part. To effect the necessary adjustment of the rangefinder stop, see repair instructions for COMPUR QUICK-CHANGE MOUNTS, page 2, item 14.

*) In the Parts Lists, issue A/April 1960, the reference numbers CN-1111-851 and CN-1111-863 were still used for 1111-850.

- ③⑦ The mount, part 008, is supplied only as a complete sub-assembly under the number 1111 50 851 008 84. It consists of: rear mount 008, front mount 016, helical focusing nut 018, diaphragm cover 009, diaphragm blade 010, diaphragm cover blade 012 and diaphragm ring 013.

Mount threads, front and rear, match the lens seating.

- ③⑧ Parts for range setting ring without milled edge and with lever.

- ③⑨ Parts for range setting ring with milled edge and without lever.

- ④⑩ Parts for range setting ring with milled edge and lever.

- ④⑪ The various retaining plates for the range setting ring should be noted.

Three types are manufactured:

- | | | |
|---|---|--------------------|
| a) with one screw-on fitting | = | 1111 30 807 030 81 |
| b) with two screw-on fittings, with 4.8 mm slot spacing | = | 1111 30 851 030 80 |
| c) with two-screw-on fittings, with 30.8 mm slot spacing | = | 1111 30 851 089 80 |
| d) with plastic supporting ring 1111 30 851 089 82 which is mounted with 4 holders 1111 30 851 030 81 | | |
- Types b) and c) have been discontinued. They may be replaced by the parts listed under d).

- ④⑫ Rocker and bearing stud are only supplied ready mounted in sub-assembly intermediate diaphragm ring 037.

- ④⑬ When ordering mount body 020, bayonet ring 001 should be simultaneously ordered and replaced if 2 threaded holes of 1.4 metric thread are not provided at the through hole for the screw coupling opposite the locking slot. For mounting and centering procedure, see Repair Instructions for COM-PUR QUICK-CHANGE MOUNTS, page 3 (types CN-1111-850).

- ④⑭ When replacing mount 008 and drive ring 086, it should be ensured that the mount 020 has an internal diameter of 32.6 mm (with a DIN tolerance of H9 = + 0.062), otherwise the mount body must also be replaced or the internal diameter increased from 32.5 to 32.6.

- ④⑮ If the speeds are marked on the shutter in green, exposure control ring 1110 10 444 539 80 and bayonet retaining ring 1110 10 444 730 84 should be used for replacement.

- ④⑯ If the retaining plate 174 has three holes for 90° countersunk screws, the screw 1110 30 359 175 82 should be used. Screw 1110 30 359 175 81 has a cheese head.

- ④⑰ The diaphragm coupling ring spring 1110 30 034 824 81 is not needed for special shutter CS-1110-444.

- ④⑱ If the casing 101 has no centering depressing for the adjustment plate, adjustment plate 1110 10 034 818 80 should be used. With this adjustment plate, light value stem 1110 30 034 192 81 is required except for CS-1110-444 with light value stem 1110 30 444 192 81.

- ⑤⑩ Consult repair instructions for shutter concerned.

- ⑤⑪ If the setting ring 148 has no drive pin, the part number concerned is 1110 10 226 148 81.

SPARE PARTS LIST
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- ⑤2 Part 1210 30 011 673 80 must be used, if the shutters still have a spring common to both the V-lock and shutter speed lever functions. On the other hand, separate springs are necessary, if the spring anchoring pin already has two spring anchoring grooves. Shutter speed lever spring 1210 30 011 673 81 should be placed in the lower groove and the V-lock spring 1210 30 011 432 80 in the upper groove.
- ⑤3 For X-M and MX-settings there are two different versions of the shift ring lock for types CN-1210-022/040/041/042 and CS-1210-701/702/703, etc.
- a) If the shift ring lock is released by pressing the lever towards the center of the shutter, where replacement is necessary use part 1210 10 702 747 80 for the lever.
- b) If the release is effected by forward axial thrust on the lever and if the shutter mount (part 745) does not have a metal strip around its circumference, use the lever 1210 10 702 747 81.
- ⑤4 For the earliest version of this shutter type, which can be recognized by the knurled diaphragm closing lever protruding from the shutter (see illustration CN-1210-022, plate 2, part 754), only spare parts No. 1210 30 702 254 83 should be used when repair is necessary.

If the shutter have an angled diaphragm closing lever without knurling, use parts 1210 30 702 754 84, 1210 30 702 754 86 or 1210 30 702 754 87 as follows:

- a) for shutters **without** metal strip on the circumference of the shutter mount (part 745)
1210 30 702 754 84 if the diaphragm closing lever is provided with an angled lug supporting it on the sleeve (part 746).
1210 30 702 754 86 if the support is provided by a pin in part 746 through a recess in the lever.
- b) For shutters **with** metal strip on the circumference of the shutter mount (part 745) use the diaphragm closing lever 1210 30 702 754 87.

- ⑤5 Formerly, the shutter fixing screw 1204 30 000 115 81 was used as a stop instead of the fillister head screw 1210 30 703 743 80. In case of repair, both these screws should be ordered.

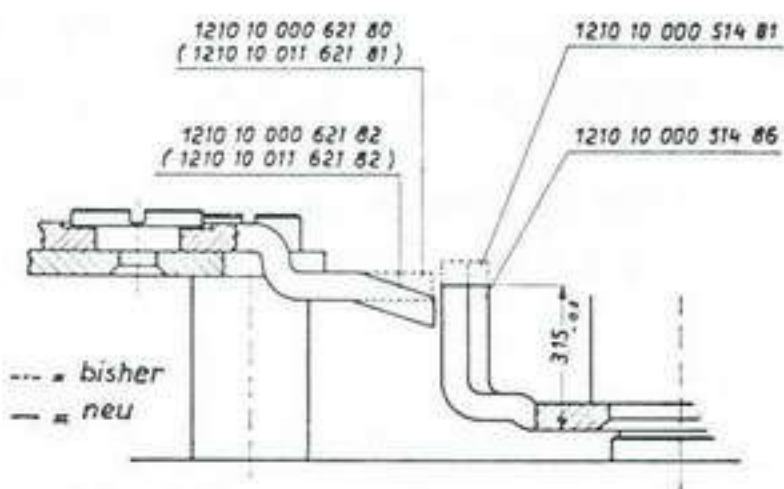
- ⑤6 There are 3 different types of flash terminals:

- | | | |
|--|----------|--------------------|
| a) without a flange on the 3 mm slip-on diameter | part no. | 1110 20 000 600 85 |
| b) with a rectangular flange | " " | 1210 20 702 600 80 |
| c) with a triangular flange | " " | 1210 20 702 600 81 |

appropriate rivets:

- | | | |
|----------------|-----|--------------------|
| to b) 1 piece | " " | 1210 40 702 784 80 |
| 1 piece | " " | 1210 40 702 785 80 |
| to c) 2 pieces | " " | 1210 40 702 784 81 |

- ⑤7 If the drive 514 is replaced, on the bridge the locking lever must be angled downwards in order to hold the drive dependably with the shutter cocked. If the locking lever on the bridge (part 621) has not the new shape, the bridge must be replaced by one with mounted new locking lever 1210 10 000 621 82 or 1210 10 011 621 82. The locking lever on the bridge is hardened and therefore cannot be bent subsequently.



⑤⑧ If the movement of coupling spring 166 in diaphragm coupling ring 590 is **not** limited by a milled recess, part 590 must be replaced.

⑤⑨ If the light value (follow-up) stem 192, the shutter mount 745 or the rangefinder control cam 775 is replaced, the position of the rangefinder control cam lug must be checked and, if necessary, readjusted. (See Instructions for Repairs, p. 2/S).

Vertical play of the light value stem: see Instructions for Repairs, p. 2/S.

When replacing the shutter mount 745 or rangefinder control cam 775, note that if the depth-of-field scale is engraved direct in the shutter mount, spare parts 1110 10 556 745 81 or 1110 30 556 775 82 must be used.

If the depth-of-field scale is on a screwed engraving strip, spare parts 1110 10 556 745 82 or 1110 30 556 775 83 must be used.

⑥⑩ This part is used in addition to screw on the bayonet retaining ring (4x).

⑥⑪ If a stop pin is riveted into the drive lug, use part 1110 10 556 552 80.

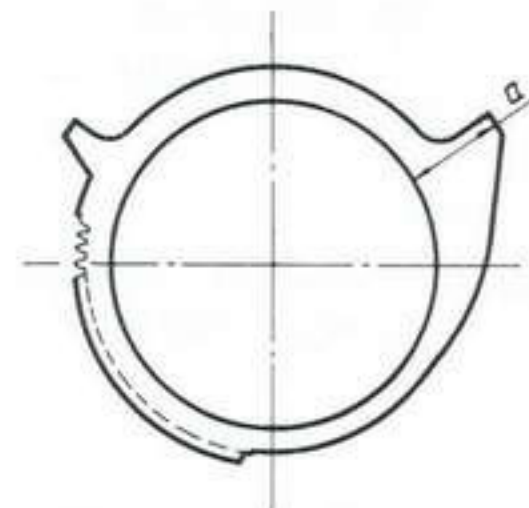
⑥⑫ Replacement parts must be adjusted (see Instructions for Repairs, page 2/S). If the old bayonet retaining ring has no centering collar for interchangeable lenses (35.8 mm diam.), the outer cover ring must also be replaced or have its internal diameter enlarged to 37.4 mm + 0.062 mm.

⑥⑬ Furthermore, when replacing part 730, the index ring 771 must also be replaced **unless** the knob of the MXV-lock (to right of engraved M) is offset.

If a pin is riveted in the lug of the cam ring (part 552), this pin must be removed.

⑥⑭ When installing new parts, check the focus setting of the lens with the camera maker's data and adjust, if necessary.

⑥⑮ Check distance **a** when replacing. If a part with $a = 6.7$ mm is to be replaced, use 1110 30 556 761 **80**, for $a = 6.0$ mm use 1110 30 556 761 **81**.



⑥⑯ This part is supplied in two thicknesses (0.05 and 0.2 mm) and serves to adjust the vertical play of the light value follow-up system (see Instructions for Repairs, p. 2/S).

⑥⑰ The direction of rotation of the diaphragm is opposite to that of the standard model.

⑥⑱ The coupling 1110 30 452 722 must be pressed on so that the distance from the upper side of the tensioning pinion to the lower side of the coupling is 14.3 – 0.1 mm.

⑥⑲ Use spacer ring 1111 30 851 088 82 if the four through holes for screws in the bayonet ring (part 001) lie half in one rotation step on the inside.

Use spacer ring 1111 30 851 088 83 or 82, if the above-mentioned holes are entirely within the area of the rotation step.

⑦① When ordering 1112 30 004 174 80 - supporting plate - include three sliding pins 1112 30 004 788 80 per supporting plate in the order.

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- ⑦① In the early models of the shutters this screw 1110 30 359 739 80 serves as a stay between housing 101 and bayonet retaining ring 730.

In the modified model, these two parts are connected radially with screw 1110 30 034 740 80 (recognizable by screw head in the conical surface next to the knob for the lens lock).

- ⑦② In type 1110-035 and the early model of type 1110-034, this screw 1110 30 035 545 80 (formerly 1110 30 034 545 80) serves as a stay between housing and bayonet retaining ring (parts 101 and 730). In the modified model 1110-34, these two parts are connected radially with the screw 1110 30 034 740 80. (Recognizable by the screw head in the conical surface next to the knob for the lens lock.) No change has been made in type 1110-035.

- ⑦③ In shutters with a radial screw connection between the housing (part 101) and bayonet retaining ring (part 730), the bayonet retaining ring 1110 10 034 730 91 or 1110 10 672 730 86 must be used. (Recognizable by the screw head in the conical surface next to the knob for the lens lock).

If the above mentioned new bayonet retaining ring is installed in shutters without the new screw connection, either the housing (part 101) must be replaced at the same time, or the screw hole (1.4 metric thread) must be tapped in the existing housing.

Caution! Avoid soiling with chips in all circumstances.

- ⑦④ In shutters with a radial screw connection between the housing (part 101) and bayonet retaining ring (part 730), the bayonet retaining ring 1110 10 359 730 91 must be used. (Recognizable by the screw head in the conical surface next to the knob for the lens lock.)

If the above mentioned new bayonet retaining ring is installed in shutters without the new screw connection, either a new housing 1110 10 359 101 80 must be installed in place of the old one or the screw hole (1.4 metric thread) must be tapped in the existing housing.

- ⑦⑤ Diaphragm coupling rings 590 and speed selector rings 539 are only supplied in matched pairs. Consequently, the part numbers given in the Parts Lists also include the corresponding speed selector ring 539.

- ⑦⑥ Diaphragm coupling rings 590 whose height on the side opposite the aperture scale is 14 mm should be assembled in conjunction with a low ball stop spring (part 045) and a high ball stop spring (part 046).

All other diaphragm coupling rings 590 should be installed with two high ball stop springs (part 046).

- ⑦⑦ In the model without a knob only oval-head countersunk screw 1210 30 660 588 80 should be used in place of these two parts.

- ⑦⑧ If the knob of the speed selector ring is screwed from **inside**, use:

speed selector ring knob	1110 40 556 581 80
and	
countersunk machine screw	1110 40 556 821 80.

If the knob of the speed selector ring is screwed from **outside**, use:

speed selector ring knob	1110 40 556 581 81
oval head screw	1110 40 556 821 80
and shim	1110 40 556 531 80.

⑦⑨ Where the drive 514, tensioning pinion 517 and tensioning idler gear 522 run in bushings (bushings riveted to base plate 201), the following parts must be used:

drive	1210 10 000 514	86	(without groove in upper face of drive bushing)
tensioning pinion	1210 10 000 517	81	
or tensioning pinion	1210 10 011 517	80	
tensioning idler gear	1210 10 011 522	80.	

If, however, the drive 514, tensioning pinion 517 an tensioning idler gear 522 run on shafts (shafts riveted to base plate 201), only the following parts must be used:

drive	1210 10 000 514	87	(with groove in upper face of drive bushing)
tensioning pinion	1210 10 000 517	82	
or tensioning pinion	1210 10 011 517	81	
tensioning idler gear	1210 30 011 522	81.	

⑧⑩ The stop 1110 10 452 299 80 is no longer supplied. Instead, the stop 1110 30 011 299 82 should be used.

If the stop 1110 10 452 299 80 (identified by riveted tensioning ring stop pin) is exchanged for the stop 1110 30 452 299 80 (**without** riveted tensioning ring stop pin), the tensioning ring 1110 10 452 528 **82** (short tensioning ring arm) must be exchanged for the tensioning ring 1110 10 452 528 **83** (long tensioning ring arm).

⑧① If in its normal position the tensioning ring is in contact with the housing (101), the tensioning ring 1110 10 452 528 **83** must be used.

Should the tensioning ring in its normal position rest against the stop 1110 10 452 299 80, either tensioning ring 1110 10 452 528 **82** or tensioning ring 1110 10 452 528 **83** may be used.

The stop 1110 10 452 299 80 is distinguished from the normal stop by the riveted tensioning ring stop pin.

⑧② For the following lenses, there are two different models with different focusing scales.

Lens	Focusing scale	Type No.
Xenar 2.8/50	∞ to 0.9 m	CN-1111-858
	∞ to 0.6 m	CN-1111-883
Xenon 1.9/50	∞ to 0.9 m	CN-1111-871
	∞ to 0.6 m	CN-1111-884

PARTS LIST Supplement

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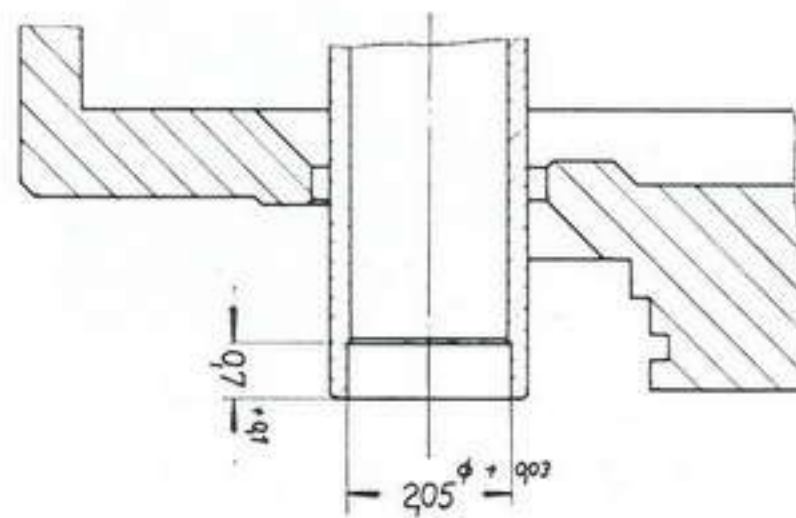
- ⑧⑥ The escapement lever is available in two different versions:
 metal lever with riveted bushing = 1914 10 001 341 81
 plastic lever = 1914 30 001 341 83

Shutters originally supplied with an escapement lever of metal must **not** be equipped with a plastic escapement lever! Nor must plastic levers be replaced by metal ones.

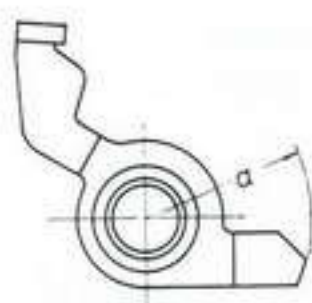
- ⑧⑦ Where the part 341 is made of metal (see ①), the spring 1914 30 001 344 80 must be used as a spare part.

- ⑧⑧ The release is available in two different versions:
 with through hole of 1.3 ϕ , without step = 1912 10 001 508 80
 with stepped bore of 1.3 ϕ / 2.2 ϕ = 1912 10 001 508 82.

- ⑧⑨ The drive is now provided with a plastic bushing for the shaft. If such a new drive is installed in a shutter not previously equipped with a plastic bushing, the bearing bushing riveted in the base plate and projecting at the rear of the shutter must be re-machined.



- ⑨⑩ The locking lever is available in 6 different selector steps which vary by the dimension "a".



for selection	
step	a
5	5.25
4	5.20
3	5.15
2	5.10
1	5.05
0	5.00

The correct step has been found when the locking lever engages the dog of the drive (part 514) at the same time or slightly later than the thrust pawl (part 514) the tang of the blade ring (part 202). The opening of the shutter blades can be avoided to a great extent if the tensioning process is interrupted prematurely.

- ⑨① Two different versions of the release are available:
 with through hole of 1.3 ϕ , without step = 1914 10 102 508 80
 with stepped bore of 1.3 ϕ / 2.2 ϕ = 1914 10 102 508 81.
- ⑨② The drive is now provided with a plastic bushing for the shaft. If such a new drive is installed in a shutter not previously equipped with a plastic bushing, the bearing bushing riveted in the base plate and projecting at the rear of the shutter must be re-machined. (See drawing of item ⑧⑨).
- ⑨③ The cover 1914 10 102 560 81 is provided with a sparking contact for the light meter circuit. If a new cover is mounted on a shutter the original cover of which did not have a sparking contact, the speed slide 1914 30 102 539 — — must be replaced as well (install part 1914 30 102 539 82) if the sparking contact is to be connected to the light meter. (If necessary, consult the camera manufacturer's (Agfa) instructions for repairs).
- ⑨④ Where the cover plate does not have an opening for accomodating the speed shaft extended at the front, install part 1914 30 301 219 80.
- ⑨⑤ For mounting a new cover plate 1914 10 301 540 **85**, the speed shaft 1914 30 301 219 81 (with the journal of 2.6 ϕ on the gear side) must be in position in the shutter. Speed shafts without journals should be replaced.
- ⑨⑦ For repairs (in the case of damaged threads), this screw is available with M 1.4 thread (instead of M 1.2) under the number 1210 30 702 542 **60**.
- ⑨⑧ Instead of 1111 **40** 851 037 83, the part 1111 **10** 851 037 03 may be used if the rocker pin is removed.

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- 99) The shutter "556" is made in two different versions.
1) CS-1110-556 = with X and M contacts
2) CS-1112-556 = only with X contact (without M).

The following parts should be used:

for CS-1110-556

1110 10 556 101 81
1110 10 556 148 82
1110 10 020 201 84
1110 10 556 771 83
1110 10 000 400

for CS-1112-556

1112 10 556 101 83
1112 10 556 148 83
1112 10 556 201 81
1112 10 556 771 84
1112 10 000 400 84

- 100) Two different systems are in use for mounting the focusing ring (part 026) on the helical focusing nut (part 018):

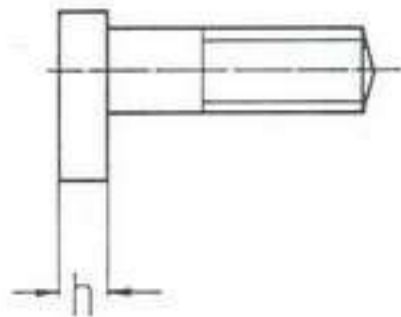
Type 1: with 3 swing-in clamp screws secured by slotted nuts.

Type 2: with a clamp ring between the outer ring of the helical focusing system (part 073) and the helical focusing nut (part 018), which is secured by three fillister head screws.

The following parts should be ordered:

for type 1

3 x slotted nut 1210 30 702 023 80
1 x focusing ring 1210 10 702 026 84
3 x clamp screw 1210 30 702 031 83
if h = 0.9-0.5



1210 30 702 031 81
if h = 0.65-0.05

for type 2

1 x focusing ring 1210 10 702 026 84
3 x screw for focusing ring 1210 30 702 031 84
1 x clamp ring 1210 40 702 049 80

If a type 1 helical focusing system (without attached clamp ring - part 049) becomes unserviceable, it must be replaced by a type 2 system (with attached clamp ring - 1210 10 702 073 87), and the following parts must be ordered in addition:

1 x focusing ring 1210 10 702 026 84
3 x screw for focusing ring 1210 30 702 031 84.

- 101) If the M-detent lever (part 696) mounted on the base plate (part 201) is made of plastic, particular care must be taken to ensure that the blade ring (part 202) has a radius of $0.15^{+0.05}$ at the tip of the M-catch (= point of contact with M-detent lever).

If necessary, correct this point of the blade ring with the aid of an oil stone.

- 102) There are two different systems for mounting the knurled sleeve (part 073) on the helical focusing tube (part 075).

Type 1: by means of a threaded ring

Type 2: by means of 8 fillister head cap screws.

The following parts should be ordered:

for type 1

1 x knurled sleeve 1210 30 703 073 83
1 x threaded ring 1210 30 703 076 80

for type 2

1 x knurled sleeve 1210 10 703 073 84
8 x screw for sleeve (short) 1210 30 702 055 81

If a new helical focusing tube 1210 10 703 075 84 is required, the following additional parts must be ordered if the knurled sleeve was previously mounted as indicated under "1":

1 x knurled sleeve	1210 10 703 073 84
8 x screw for sleeve (short)	1210 30 702 055 81

103 There are two different systems for mounting the knurled sleeve (part 073) on the helical focusing tube (part 075):

Type 1: by means of a threaded ring

Type 2: by means of 8 fillister head cap screws

The following parts should be ordered:

for type 1		for type 2
1 x knurled sleeve	1210 30 704 073 83	1 x knurled sleeve 1210 10 704 073 84
1 x threaded ring	1210 30 703 076 80	8 x screw for sleeve (short) 1210 30 702 055 81

If a new helical focusing tube 1210 10 704 075 84 is required, the following additional parts must be ordered if the knurled sleeve was previously mounted as indicated under "1":

1 x knurled sleeve	1210 10 704 073 84
8 x screw for sleeve (short)	1210 30 702 055 81

If a bayonet ring is to be exchanged with which the four through holes for screws are on the inside partly within a rotation step, the automatic diaphragm ring (part 083) must be replaced at the same time.

105 This part is available in two different versions:

1111 40 863 003 80 for bayonet rings with which the four through holes for screws are on the inside partly within a rotation step;

1111 40 851 003 81 if the aforementioned holes are entirely within the area of the rotation step.

106 When making the replacement, remember that the new spacer ring 1111 30 851 033 82 can only be used together with the supporting ring (part 089) and the appropriate holders for the focusing ring 1111 30 851 030 81.

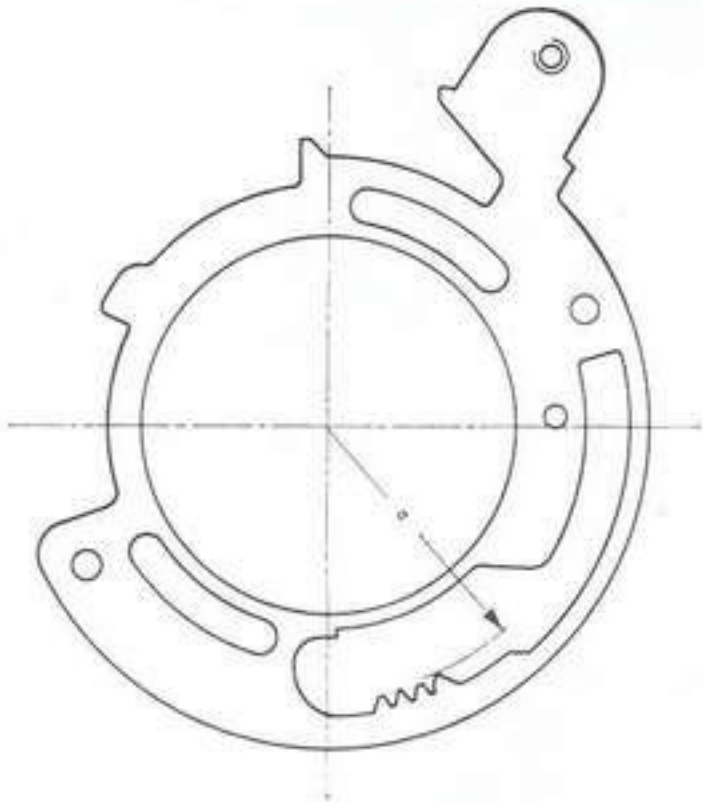
107 Use the automatic diaphragm ring 1111 30 851 083 85 if the four through holes for screws in the bayonet ring (part 001) are on the inside partly within a rotation step.

Use the automatic diaphragm ring 1111 30 851 083 86 if the aforementioned holes are entirely within the area of the rotation step.

108 Instead of the tensioning ring knob 1210 10 051 509, the knob of the opening lever 1210 30 664 269 is used as tensioning ring knob.

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⑩ The tensioning ring is available in 9 different selector steps which vary in the dimension „a“. Each ring has a characteristic number stamped on its front.



for selection		
step	$\alpha(+0,05)$	characteristic number
0	17,35	without
1	17,40	1
2	17,45	2
3	17,50	3
4	17,55	4
5	17,60	5
6	17,65	6
7	17,70	7
8	17,75	8

The correct step has been found if the thrust pawl (514) engages the tang of the blade ring 202 shortly before the shutter is tripped by the tensioning ring 528.

- ⑪ When replacing the drive 514 or the slip-on pinion 722, also consult item 9 of the repair instructions as well as note ⑩ of the Supplement.
- ⑫ Instead of the leaf spring 595 and the pressure piece 596, the spring 114 for the click stop diaphragm is now used.
- ⑬ Helical focusing drives are only supplied as a complete unit consisting of the following components:

for the following types or the special designs derived from them	helical focusing drive	consisting of
CS-1210-702	1210 10 702 073 88	1210 40 702 018 82 1210 40 702 049 82 1210 40 702 073 85 1210 40 702 074 81
CS-1210-703	1210 10 703 075 85 od. 93 (See Parts List)	1210 40 703 018 80/93 1210 40 703 074 82 1210 40 703 075 83
CS-1210-704	1210 40 704 075 84 od. 93 (See Parts List)	1210 40 704 018 80/93 1210 40 704 074 82 1210 40 704 075 83
CS-1210-705	1210 10 705 075 80	1210 40 705 018 80 1210 40 705 074 80 1210 40 705 075 80
CS-1210-707	1210 10 707 075 80 od. 81 (See Parts List)	1210 40 707 018 80/81 1210 40 707 074 80 1210 40 707 075 80
CS-1210-710	1210 10 710 075 81	1210 40 703 018 80 1210 40 710 074 80 1210 40 703 075 83
CS-1210-713	1210 10 713 073 80	1210 40 713 018 80 1210 40 702 049 82 1210 40 713 073 80 1210 40 713 074 80 1210 20 713 075 80

⑪③ The engraving of the speed selector ring 539 has recently been replaced by a screwed-on engraved strip. (The production of speed selector rings with engraving has been discontinued.) If the speed selector ring has to be exchanged, use the parts 539 and 541 plus two screws 1111 30 806 029 as scheduled in the parts lists of the shutters concerned.

⑪④ The short lug on the tensioning ring arm must be removed if the housing does not have the corresponding recess (see arrow, Table 2a).
When installing a new housing 1210 10 702 101 87 (with locking lever for blade opening ring 263) use the tensioning ring 1210 10 702 528 83.
Housings 101 are henceforth available only as part No. 1210 10 702 101 87 (with locking lever for blade opening ring 263). When exchanging an older housing for a new one, the tensioning ring 528 must likewise be replaced by a new one of type 1210 10 702 528 83. (See instructions for repairs 1210–022).

⑪⑤ The shutter CS–1210–710 is available in two different models.

Model 1: with a smallest f-stop of 32 (old type)
Model 2: with a smallest f-stop of 45

The following numbers are applicable:

Model 1 smallest f-stop = 32	Model 2 smallest f-stop = 45
1210 10 703 037 80	1210 10 702 037 82
1210 10 703 075 84	1210 10 710 075 81
1210 30 710 541 80	1210 30 704 541 80
1210 10 710 590 80	1210 10 704 590 88

The parts of model 2 may also be used for conversion to a diaphragm range including f/45.

⑪⑦ When replacing the shift ring 148, care should be taken to determine whether the M-detent lever 696 riveted to the base plate 201 is made of metal or plastic.

The following numbers are applicable:

for metal M-detent levers 696	for plastic M-detent levers 696
1110 10 000 148 81	1110 10 000 148 82
1110 10 226 148 82	1110 10 226 148 83
1110 10 231 148 81	1110 10 231 148 82
1110 10 235 148 82	1100 10 235 148 83
1110 10 544 148 80	1110 10 544 148 81
1110 10 627 148 80	1110 10 627 148 81
1110 10 628 148 80	1110 10 628 148 81
1110 10 630 148 81	1110 10 630 148 82
1110 10 645 148 82	1110 10 645 148 83
1210 10 000 148 82	1210 10 000 148 83
1210 10 051 148 80	1210 10 051 148 81
1210 10 275 148 84	1210 10 275 148 85
1210 10 276 148 80	1210 10 276 148 81
1210 10 604 148 80	1210 10 604 148 81
1210 10 668 148 80	1210 10 668 148 81
1210 10 671 148 80	1210 10 671 148 81

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- ⑪⑧ Both metal and plastic M-detent levers 696 are available. In the case of repairs, the same type of lever must be reinstalled.

The following numbers are applicable:

for the metal lever 1210 40 000 696 80
for the plastic lever 1110 40 000 696 91

See also Note (8).

- ⑪⑨ The spring for the blade-opening lever 264 is now only available with two windings. This spring must only be mounted with the aid of the screw for blade-opening lever 1210 30 051 263 81.

- ⑫⑩ There are three different types of shift ring 148 and two different types of shift ring spring 151 which should be used as indicated in the following table:

Shutter mount with/with-out metal strip on circum-ference	M-detent lever 696 made of metal/plastic	Shift ring spring 151	Shift ring 148 to be used
without	metal	1210 30 702 151 80	1210 10 702 148 81
with	metal	1210 30 702 151 80	1210 10 702 148 82
with	plastic	1210 30 702 151 80	1210 10 702 148 83 or 84
with	plastic	1210 30 702 151 83	1210 10 702 148 84
Types of shift ring spring: 1210 30 702 151 80 = bright 1210 30 702 151 81 = copper-plated			

121 The following types of base plates 201 available:

Type	Bearing of parts 517 and 522	*Base plate with/without eccentric at self-timer	M-detent lever 696 made of	Number of base plate	used for shutter
A	bushes	without	metal	1210 10 702 201 81 1210 10 670 201 81	
B	bushes	with	metal	1210 10 702 201 88 1210 10 670 201 87	
C	spindles	with	metal	1210 10 702 201 89 1210 10 670 201 88	CS-1210-701/702 etc. CS-1210-670
D	spindles	with	plastic	1210 10 702 201 91 1210 10 670 201 90	CS-1210-701/702 etc. CS-1210-670

*for more details, see item 122

Type A (1210 10 702 201 01 and 1210 10 670 201 81) as well as type B (1210 10 702 201 88 and 1210 10 670 201 87) have been discontinued. When repairing shutters which correspond to these older types A and B, use type C (1210 10 702 201 89 and 1210 10 670 201 88).

In this case, the following parts must also be exchanged:

Type before repairs	Install these parts	
A	Mounting tube	1210 10 702 204 82
	Speed lever	1210 30 000 669 82
	Drive	1210 10 000 514 87
	Tensioning pinion	1210 10 011 517 81
	Tensioning idler gear	1210 30 011 522 81
B	Drive	1210 10 000 514 87
	Tensioning pinion	1210 10 011 517 81
	Tensioning idler gear	1210 30 011 522 81

122 When exchanging the mounting tube 204, note the following:

- a) If the base plate has an eccentric (head with screw slot) beside the screw-on lug of the mounting tube 204, the mounting tube 1210 10 702 204 82 can be installed without difficulty.
- b) If there is no eccentric, the following parts must also be exchanged:

Install:

Mounting tube	1210 10 702 204 82	
Base plate	1210 10 702 201 89	for CS-1210-701, 702, 703, etc.
Base plate	1210 10 670 201 88	for CS-1210-670
Speed lever	1210 30 000 669 82	
Drive	1210 10 000 514 87	
Tensioning pinion	1210 10 011 517 81	
Tensioning idler gear	1210 30 011 522 81	

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123 The shutter 231 is available in two different models

- 1) CS-1110-231 – with X and M contacts
- 2) CS-1112-231 – only with X contact

Use the following parts:

for CS-1110-231	for CS-1112-231
1110 10 231 101 82	1112 10 231 101 80
1110 10 231 148 81	1112 10 231 148 83
1110 10 000 201 91	1112 10 231 201 80
1110 10 000 202 92	1112 10 000 202 82
1110 10 000 400 88	1112 10 000 400 84
1110 30 000 619 84	1112 30 231 619 80
1110 30 000 641 83	1112 30 231 641 80

124 The shutters CS-1210-275 and CS-1210-276 are available in two different models.
Both shutters of type 1 have an aperture of 24.0.
Both shutters of type 2 have an aperture of 20.0.

The following numbers are applicable:

for 24 mm aperture	for 20 mm aperture
1210 10 000 106 86	1210 10 275 106 81
1210 10 000 116 84	1210 10 275 116 81
1210 10 000 208 83	1210 10 275 208 80
1210 10 000 225 80	1210 10 275 225 80
1210 10 000 267 81	1210 10 275 267 80
1210 10 000 268 81	1210 10 275 268 80

125 If the tensioning ring spring 521 or the tensioning ring 528 have to be exchanged, first check where the original tensioning ring spring is hooked in.

The following numbers are applicable:

if hooked into the speed lever screw	1110 40 035 521 84 1110 10 035 528 84
if hooked into the delayed-action mechanism	1110 40 035 521 86 1110 10 035 528 85

126 When exchanging the speed lever screw 671, note whether the tensioning ring spring 521 is hooked into the speed lever screw or the delayed-action mechanism.

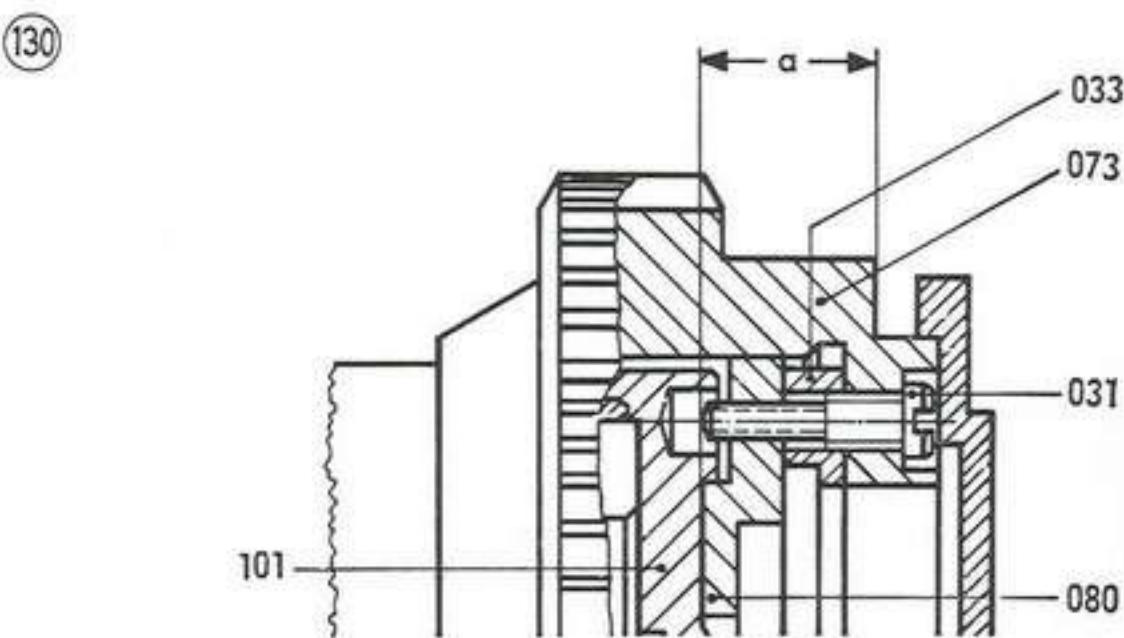
The following numbers are applicable:

if hooked into the speed lever screw	1110 30 230 671 80
if hooked into the delayed-action mechanism	1110 30 000 671 82

127 The spring for the V-detent lever 1110 30 011 432 81 and the speed lever spring 1110 30 011 673 83 can only be used if these two springs are arranged as shown on picture plate 1 No. CN-1110-035 (1969 edition).
However, if there is only one spring serving for both the V-detent and the speed lever (see illustration on picture plate CN-1112-010), the speed lever spring No. 1110 30 011 673 82 must be used.

128 The external sleeve No. 1210 10 707 073 81 is only supplied with tripod bush flange in place.

129 If it is necessary to exchange the knob of the shift ring lock 751 or the spring 749, part 786 must be ordered as well.



When exchanging one of the three parts 033, 073 or 080, it is absolutely indispensable to restore the vertical distance "a". The spacer ring 033 is supplied slightly larger and must be turned down accordingly. For further details, see the instructions supplied by Messrs. Carl Zeiss.

132 Should the focusing ring 026 have to be exchanged, it is necessary first to determine how it is mounted on the helical focusing nut 018. (See Note 100).
If the ring is mounted as in version 1, a new clamp ring 1210 40 702 049 82 must also be installed. To do this however, the helical focusing mechanism must first be disassembled and reassembled as described in the Instructions for Repairs, page 9. Then mount the new focusing ring according to page 10 of the Instructions for Repairs.

133 In recent shutter models, the outer cover ring has a stay for the idler shaft of the adjusting plate 1112 10 359 818 (formerly 1110 10 034 818).

If repairs are made in this area, the stay should be installed as well. To do this, the following parts are needed:

	with type 1110 (or 1112) 359	with type 1110-358
Outer cover ring	1112 50 359 738 81 (*)	1110 50 358 738 81 (*)
Adjusting plate	1112 10 359 818 80	1112 10 359 818 80

(*) This ring consists of the following parts which need **not** be ordered separately:

Outer cover ring	1112 10 359 738 81	1112 10 358 738 82
Diaphragm coupling ring	1110 40 035 590 82	1110 40 034 590 84
Flanged ring	1110 10 035 815 81	1110 10 034 815 82
Spring f. diaphr. coupling ring	1110 30 034 824 82	1110 30 034 824 82
Staybolt	1112 30 359 830 81	1112 30 359 830 81

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Sheet 11

- ⑬④ In recent shutter models, the blade opening lever 262 is shorter and has a stamped knurl instead of the knurled knob 1210 30 051 269 80. The screw 1110 30 030 743 80 is no longer used.

Only the new lever 1210 10 051 262 81 will be supplied as a spare part.

- ⑬⑤ The special-purpose shutter CS-1210-602 has been discontinued. For repairs, use the speed selector ring 1210 30 051 539 81 (not engraved "LINHOF").
For the blade opening lever only the type 1210 10 051 262 81 must be used (without a knob — with stamped knurl). If the entire shutter has to be replaced, use the type CN-1210-051 c.

- ⑬⑥ For all shutter types of the series 1110/1112 and 1210 several versions of escapements were manufactured. They can be distinguished by the following features:

Earlier version:

Plate aperture for detent pin (speed control pin) open on one side, opposite the wall of the housing.

New version:

Detent-pin aperture in plate closed on all sides.
For repairs, only escapements of the new version will be supplied.

*) **Exception:** 1112 10 005 300 80. This escapement is only supplied in the conventional design.

Note: When exchanging an earlier escapement for a new one, be sure to replace the cam ring (part 552) as well. Every **new escapement** with a fully closed aperture for the detent pin goes with a **new cam ring**. This is distinguished by an 0.8-mm hole between its central aperture and the 1/15 sec speed control step (= highest point of cam roughly in the middle of the speed cam).

For the part numbers of escapements and cam rings see the relevant Parts Lists. For orders and repairs please note the following **indices**:

Escapements

Earlier version:

Available only until
present stock is sold

1110 10 000 300 81

*) 1112 10 005 300 80

1210 10 000 300 81

1210 10 011 300 81

1210 10 681 300 80

New version:

Exclusively for use with cam
rings (part 552) having an index hole

1110 10 000 300 84

1210 10 000 300 84

1210 10 011 300 84

1210 10 681 300 82

Cam rings

Earlier version (without index hole)

1110 30 000 552 **85**
1110 30 010 552 **84**
1110 30 018 522 **83**
1110 30 020 552 **84**
1110 10 024 552 **81**
1110 10 030 552 **84**
1110 10 034 552 **89**
1110 10 035 552 **81**
*) 1112 30 004 552 **81**
1110 30 139 552 **82**
1110 30 230 552 **84**
1112 30 455 552 **80**
1110 30 556 552 **83**
1112 30 558 552 **80**

1210 30 000 552 **82**
1210 30 702 552 **82**
1210 30 660 552 **80**
1210 30 604 552 **80**
1210 10 604 552 **81**
1210 30 275 552 **83**
1210 30 671 552 **81**
1210 30 681 552 **80**



New version (with index hole)

1110 30 000 552 **87**
1110 30 010 552 **85**
1110 30 018 552 **84**
1110 30 020 552 **85**
1110 10 024 552 **82**
1110 10 030 552 **85**
1110 10 034 552 **90**
1110 10 035 552 **82**

1110 30 139 552 **83**
1110 30 230 552 **85**
1112 30 455 552 **81**
1110 30 556 552 **84**
1112 30 558 552 **81**

1210 30 000 552 **84**
1210 30 702 552 **83**
1210 30 660 552 **81**

1210 10 604 552 **82**
1210 30 275 552 **84**
1210 30 671 552 **82**
1210 30 681 552 **81**

This index is not always identical with the one given in the Parts Lists. However, this difference is of no importance for operation. – Earlier cam rings (without an index hole) will be supplied until the present stock is exhausted. – Whenever an escapement or a cam ring is found to be defective, it is advisable to install the new version.

*) **Exception:** This cam ring will be supplied in the conventional design for the future.

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Sheet 12

⑬⑦ The escapement 1210 10 011 300 may have either one of the two anchor plates 319, see picture plate 5 for CN-1110-000. The difference consists in the length of the lug engaging the cam ring. To avoid confusion, the longer lug has a notch in its front. In the case of repairs, only new escapements 1210 10 011 300 **85** with a long anchor-plate lug (with notch) should be used.

N o t e : If the defective escapement did not have a notch in its anchor plate, certain types of shutter require replacement of the following parts together with the installation of the new escapement 1210 10 011 300 **85**:

CS-1210-604	Speed selector ring 1210 10 604 539 82
CS-1210-670, CS-1210-701, 702, 703, etc.	Cover plate 1210 30 702 540 82
CS-1210-671 to 679	Cover plate 1210 30 702 540 82

See also Note ⑬⑥

⑬⑨ Two different types of intermediate diaphragm ring (037) have been used in production:

Type 1:

The rocker 040 is riveted to the shaft in the intermediate diaphragm ring.

Type 2:

The rocker 040 is loosely slipped onto the shaft in the intermediate diaphragm ring.

As a spare part, only type 2 (without rocker 040) is available. The rocker for the type 2 ring is available under the number 1210 10 702 040 82.

Intermediate diaphragm rings (037) of type 1 **cannot** be installed in shutters originally provided with a type 2 ring.

Table see overleaf:

Table of catalog numbers:

Type 1

(with riveted rocker 040)

1210 10 702 037 **82**
1210 10 670 037 **80**
1210 10 701 037 **80**
1210 10 703 037 **81**
1210 10 706 037 **80**
1210 10 713 037 **80**

Type 2

(for loose rocker 1210 10 702 040 82)

1210 10 702 037 **83**
1210 10 670 037 **81**
1210 10 701 037 **81**
1210 10 703 037 **82**
1210 10 706 037 **81**
1210 10 713 037 **81**

140 Knob for shift-ring lock 1210 40 702 751

This part is available in two different versions:

1. Stop lug 2 mm wide 1210 40 702 751 **01**
2. Stop lug 1 mm wide 1210 40 702 751 **02**

When the present stock of part No. 01 is exhausted, only part No. 02 will be supplied as a spare part which can be installed in the place of 01.

C a u t i o n : Do not install type 01 parts (with 2 mm lug) into more recent shutters instead of the 02 parts!

141 Cover blade 1210 30 702 180

This part is available in two different versions:

1. Breite des äußeren Lappens 12 mm 1210 30 702 180 **00**
2. Breite des äußeren Lappens 10 mm 1210 30 702 180 **01**

When the present stock of part No. 00 is exhausted, only part No. 01 will be supplied as a spare part which can be installed in the place of 00.

C a u t i o n : Do not install type 00 parts (12 mm wide) instead of type 01 parts!

142 Flash terminal for CS-1307-608 and 606, 607

Parts 1107 10 128 600 81 and 1106 30 128 612 81 included in the Parts List have been discontinued. Instead, you will receive the flash terminal 1107 10 000 600 85 that is secured to the base plate by means of screw 1206 30 000 612 84. The additional terminal 1307 10 606 600 80 is slipped onto the new terminal and screwed to the edge of the housing by means of screw 1402 40 000 283 81. If necessary, bore the tapped M1.4 hole of the additional terminal.

143 Diaphragm blades 1210 10 000 105

Diaphragm blades are available without enamel finish (1210 10 000 105 86) and with enamel finish (1210 10 000 105 88). The enameled blades can be distinguished from the nonenameled blades by their mat black finish. Use exclusively enameled blades for shutters originally fitted with this type of blade.

Conversely, be sure to use non-enameled blades for shutters originally equipped with that type of blade.

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Sheet 13

- ①44 Housings 101 will henceforth be supplied only with index 88 = with enlarged diaphragm space for enameled diaphragm blades.
Housings with index 88 can be recognized by a tapered countersinking in the opening for pin 122 (see picture plate 1110 000 18) on their inside.
If a housing with non-enameled diaphragm blades has to be replaced, order 5 enameled diaphragm blades 105, index 88, together with housing 101, index 88.
- ①45 Diaphragm blades 1210 10 000 105
Diaphragm blades are available in a plain version (1210 10 678 105 80) and an enameled version (1210 10 671 105 88). The enameled blades can be recognized by their mat black finish.
Be sure to use exclusively enameled diaphragm blades in shutters originally supplied with enameled blades. On the other hand, plain blades must be used for shutters originally provided with plain blades.
- ①46 As an exception to Note 144, housings 1210 10 277 101 80 and 1210 10 278 101 80 will accept both enameled and plain diaphragm blades.
Diaphragm blades 1210 10 277 105 can henceforth be supplied only with enamel finish = index 88.
Contrary to Note 143, these diaphragm blades may be replaced by blades 277 105 without enamel finish.